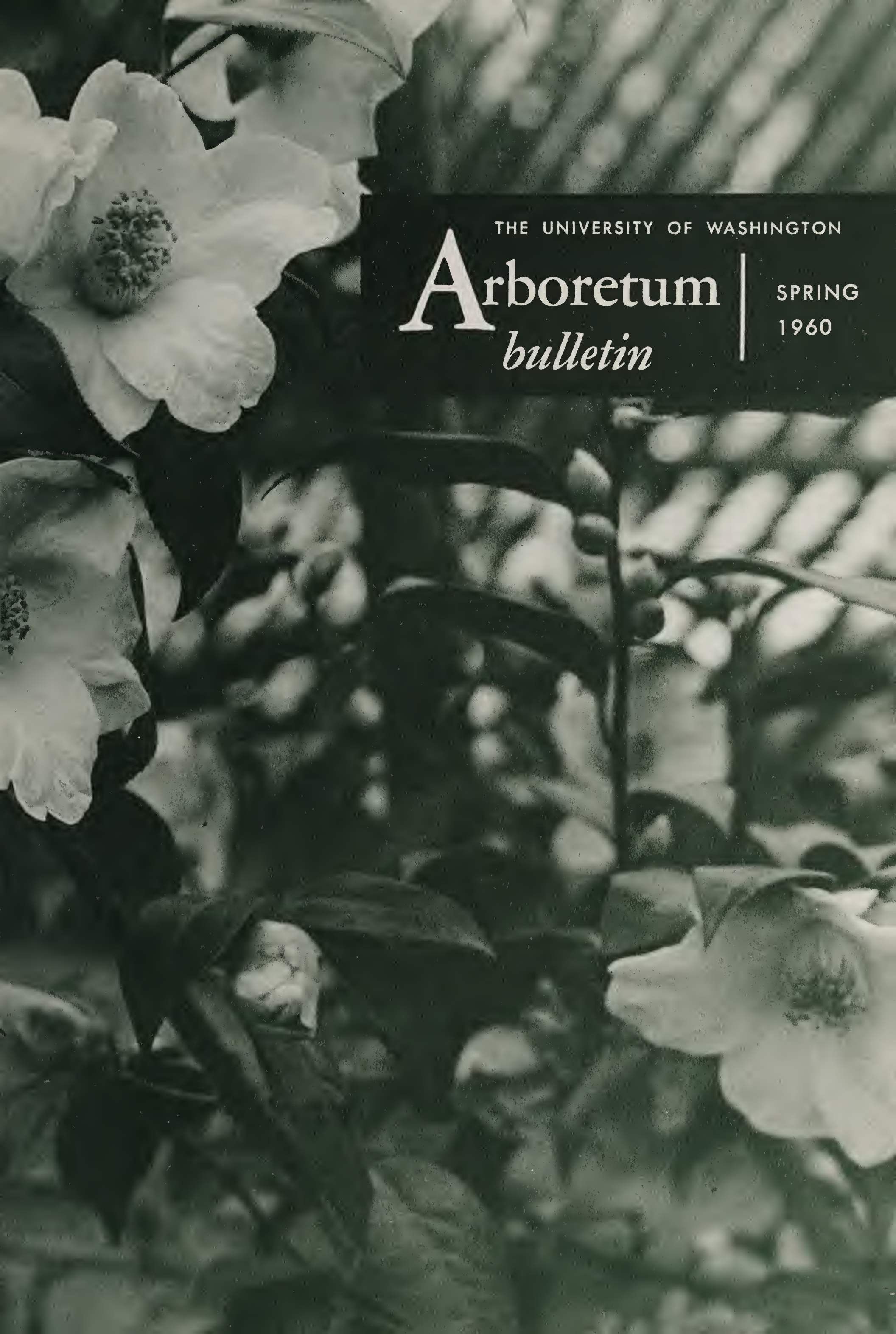

THE UNIVERSITY OF WASHINGTON

# Arboretum *bulletin*

SPRING 1960

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# Arboretum bulletin

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COVER PAGE—
*Camellia Williamsii* 'J. C. Williams'
PHOTO BY: E. F. (WHITIE) MARTEN

# "AS THE SWIFT SEASONS ROLL"

*The editorial committee wishes to stress the fact that an enormous amount of excellent reference material has been offered by the University of Washington Arboretum Bulletin through its years of publication. Most of it lies dormant in the shelved issues. We hereby commend all of it to our readers for re-examination and offer you, in the Silver Anniversary issues, a kaleidoscopic view from spring to winter of the wealth of data and opinion which has been accumulated "as the swift seasons roll." Emphasis has been placed on excerpts and condensations from early issues which may not be so readily accessible to all readers. In so doing we honor those whose vision and effort brought the* BULLETIN *into being and gave it direction toward the place of distinction in the horticultural world which it enjoys today.*

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# RHODODENDRONS

RHODODENDRONS belong to the *Ericaceae,* which includes a cast clan of about 70 genera and 1,500 species. In general, the members of the family prefer the cool, temperate zones as well as the high, cool mountains of the tropics in both the eastern and western hemisphere.

### *Ericaceae*

The general characteristics of the family are as follows. They are usually shrubs or small trees. They are usually evergreen, although the Azalea series of rhododendrons is not, and there are other exceptions. The leaves are usually opposite. The flowers are perfect; that is, each flower contains the necessary reproductive organs—stamens and pistil. The flowers are sometimes regular but often irregular; that is, the petals are not exactly alike. The flowers occur singly or in small or large clusters of various forms. The corolla is usually gamopetalous; that is, the petals are more or less united, forming a tube. The calyx and petals are 4-5 parted; that is, the united calyx and united corolla may have 4-5 lobes on the margin. The fruit is often a dry capsule but sometimes a berry as in the huckleberries, wintergreens and pernettyas.

Some of the common genera of the *Ericaceae* are as follows: Ledum—Labrador tea; Leiophyllum—sand myrtle; Erica, Calluna, Cassiope, Phyllodoce, Bruckenthalia—the heaths and heathers; Kalmia—calico bush; Andromeda—bog rosemary; Oxydendrum—sourwood; Epigaea—trailing arbutus; Gaultheria—salal or wintergreen; Pernettya; Vaccinium—huckleberry; Arctostaphylos—bearberry and manzanita; and, of course, Rhododendron.

The word rhododendron comes from two Greek words—rhodo, rose, and dendron, tree. It was the ancient Greek name of *Nerium Oleander.* It probably came to be applied to our genus because so many of the flowers are rose-colored which in the old sense is red. Merely for the sake of classification and study this great aggregation has been divided into large groups called series.

I have been interested to notice that collectors who come to my garden are often able to tell by the appearance of a plant and especially of the leaves exactly to what series a rhododendron belongs. This is more often true of men than women. Men collectors also like to choose a series and gather together all the species belonging to it. Women usually select a specimen regardless of series.

The series of rhododendrons are then further subdivided into species, as are all other plants. The rhododendron genus includes at least 700 species, many varieties, and untold numbers of hybrids.

We cannot point to any spot on the globe and say this is where such and such a series

grows. The plants in themselves are not very helpful in making generalities easy for us. There are about 26 species in North America. Of these there are three on the west coast, three in Alaska, one in the mountains of New England and the rest in the southeastern part of the United States. There are about three species in Europe and one in Australia. There are none in Africa and none in Mexico. Most of the species, and by far the handsomest, occur in Asia, throughout the Himalaya mountains, where they range from altitudes of 6,000 to 15,000 feet in the regions of heavy fog and great annual rainfall (100-140 inches). In high regions they are exposed to full sun but they are moist at the roots from the continuous stream of water percolating down from the melting snows. In winter they are sheltered from great cold by thick blankets of snow which cover them. In the Himalayas rhododendrons are so common that their wood is used for fuel and for making various utensils.

It is in the last hundred years that plant explorers have brought back the great mass of rhododendron species. Linnaeus (1764) knew only ten species. De Candolle (1839) knew thirty-two.

The specific rhododendron characteristics are as follows. They are mostly evergreen, though not always. The flowers are solitary or few to many in enormous clusters. The corolla may be rotate (flat, saucer-shaped), campanulate (bell-shaped) with a broad base, or funnel-form with a narrow base, or occasionally narrowly cylindrical. The corolla is usually five-lobed and very slightly irregular. The fruit is a dry capsule containing hundreds of seeds.

There are the most fascinating variations among rhododendrons—sizes from tall trees to the tiniest creeping and ground-covering shrubs. The leaves vary from very small to blades twelve inches long and over. They may be smooth and glossy or roughly puckered; they may be punctate with small pellucid glands or covered with stalked and sticky glands, tiny overlapping scales or long gleaming hairs, or with a thick felty indumentum varying in color from soft cream to cinnamon brown. Many of them are aromatic and emit a spicy fragrance when touched or when the hose is turned upon them.

And the flowers! There is the greatest variation in size, shape, texture and color. In selecting a plant for myself I choose first beautiful foliage and good form. In the flower I look for elegance of form and beautiful texture, usually thick and waxy rather than thin and silky. The color is important, too, for I do not want any one color to predominate in my rhododendron garden.

Once planted, rhododendrons require less care than most shrubs. Most of them may be moved at any time without injury, except during frost. It is said that moving them retards the flowers for one year. I do not feel that this is the case in my garden. But the preparation of the soil in the first place is important. Since they are natives of swamps, woods, mountain sides and alpine pastures where the soil is decomposed vegetable matter mixed with stones and grit, with moisture always present but never stagnant, we must try to provide as well for them. The soil must be deeply dug and trenched. In planting I like to have the individual hole deep enough and wide enough so I can set the plant on a cushion of damp peat and also surround the plant with a collar of this material before covering with dirt. The soil and sub-stratum must be lime-free. Such soils as heavy loam, clayey shales, pure peat, if drained, and pure sand can be prepared for rhododendrons if mixed with sand and peat judiciously. A surface compost of leaf mold, completely rotted cow manure or peat moss is beneficial. In England they use 10- to 12-inch coatings of withered leaves. That does not seem advisable in regions where an endless battle needs to be waged against slugs.

The climate in every garden is different. Air-currents, draughts, overhead shelter, elevation, atmospheric moisture, composition and condition of soil, whether it is retentive of moisture or not, are factors to be considered.

Perpetual draughts, early morning or midday sun, are conditions to be avoided. But

plants can be sheltered from cutting winds and shaded from a too hot sun by more robust shrubs.

By judicious selection it is possible to have a rhododendron in bloom every month of the year. In my garden the season is begun in January with a group of *R. mucronulatum* planted against the dark green of *Photinia serrulata*. In other gardens *R.* 'Christmas Cheer,' *R. Nobleanum* or *R.* 'Rosa Mundi' may offer the first bloom.

In grouping rhododendrons heaviness should be avoided. Plantings made up of single plants of many species are apt to look lumpy and spotty. They do not like to be crowded, for the branches must be given space to elongate. A very attractive planting and one that rhododendrons themselves like is made by stacking plants: first, the taller ones, giving them ample space; close to them the next taller, and so on, ending in prostrate forms till the area is well filled. Among the lowest ones gaultherias, vacciniums, shortias and such may be introduced with good effect.

Do not let your plants set seed unless you intend to harvest them. Remove the flowers as soon as they begin to wither; to leave them retards next year's growth.

It takes from eighteen months to eighteen years for plants to come into bloom, depending upon the species. Wet or sunless seasons delay them. In some cases it takes five years for the plant to take on the adult character of its leaves.

ELSE M. FRYE
(March 1943)

### *Rhododendron mucronulatum*

*Rhododendron mucronulatum's* chief claim to attention is in its early blooming period—January. The high rating given it by the Rhododendron Association is primarily for this reason as well as its general all-around hardiness. It is deciduous.

As a native of Korea and Japan, it has long been acclimated to early frosts and sharp changes in temperature during its blooming period. Frosts injure the flowers only and the unopened buds follow with the first warmth.

It should be given a green background with sun exposure and protection from winter's cutting winds, so that the rosy-purple flowers are set off to the best advantage when all else in the garden is still in its winter blanket. The shade of color ranges from a light pink to a rosy-purple. The darker forms are best.

A. P. FREDRICKSON
(September 1941)

Many early plantings in the Pacific Northwest were made along forest drives or where the plants were otherwise shaded by heavy overhanging branches. While these generally grew luxuriantly the flower crop was mostly unsatisfactory. In fact the flowers which did bloom were usually found around the edges of the planting or in fairly open spaces where they received strong light from the sky or some direct sunlight.

I often think that we over-emphasize the matter of shade, for while many varieties of rhododendrons do require some protection from the sun, it would be much better if we spoke of this protection as broken sunlight instead of shade, or dappled sunlight as the English often speak of it. All plants in an open, well-lighted area will bloom at a much earlier age and more freely than in a shadier place. While their height may not be as great when planted in the open, they will usually shape up better. Plants like *R. ciliatum* and many others make tall leggy growth in the shade but in an open location remain low and flower profusely. In such open locations many varieties can be used as rock garden plants.

. . . I disbud some flower buds before they fully mature and try to leave every alternate truss free to ripen new wood and flower buds. Whether this theory is correct I do not know but it does give me a better continuity of blooms than otherwise. It also has the advantage of developing better flowers on the trusses which are left than would be the case if all buds were permitted to flower.

HERBERT G. IHRIG
(June 1944)

Everyone admires *Rhododendron Loderi* 'King George' with its large trusses up to eighteen inches across and individual florets up to seven inches in diameter. It opens a delicate pink turning white with age. A grouping of large plants is indeed a beautiful sight when in bloom in May.

DONALD G. GRAHAM
(Spring 1949)

## How Rhododendrons Are Named

Two types of horticultural varieties of rhododendrons are in the nursery trade. The first type includes those varieties which have been propagated asexually by cutting, layers, or grafts from one original selected seedling. Such varieties are called clones or clonal varieties and all plants of such a variety have identical characters except as they are influenced by environment. The second type of variety consists of a group of seedlings of a particular cross, usually between two species, or between a species and a variety. Such "group" varieties exhibit more or less variation, so that two plants of such a variety may be quite different. As recommended in the Preliminary Code of Nomenclature published by the American Rhododendron Society, we are marking all "group" varieties by the abbreviation "gr." All varieties not so marked are clones. All special award varieties, marked A.M., F.C.C., etc., are clones which have been propagated asexually from the original plant receiving the award.

J. HAROLD CLARKE
(Winter 1950)

. . . What I note down here is for the amateur in this part of the country. . . . The named varieties of rhododendrons have to be propagated from wood of the original plants, by grafting, cuttings, layering, budding and scion budding for most of the broadleaved evergreen kinds and our finest garden varieties.

The Cunningham (pink and white forms), 'Rosa Mundi', and some fine varieties of *R. ponticum* can be divided easily if wanted in quantity, to hold the soil on banks and steep woodland patches. *Rhododendron pemakoense* and some of the Azalea group, like *viscosa* and *occidentalis,* send out runners that can easily be cut off and planted in rows to grow on.

Layering is the simplest way for the amateur to increase plants. It requires no skill or experience, no equipment or expense of any kind, and shows no losses or failures. Methods of layering can be many, but the simplest is to take a low branch, lay it flat on the ground and cover with peat moss. Bend up the tips and tie them to stakes. To bend up the tip is important because that checks the sap flow and makes them root there. To cut the bark underneath is not necessary, but lay a few rocks or bricks on top to hold them down and keep them moist.

I have seen them rooted just by falling leaves lying on them, even rooting in an old robin's nest filled up with leaves in a moist place, where sun and wind doesn't dry it out.

Is that all there is to it? Yes, if you have the right plant for the place they are to be used for. Layering has been done commercially in England for years and they are still doing it.

*Grafting Rhododendrons:* The first step is to sow the seed of *Rhododendron ponticum* or a ponticum hybrid in some cases. Take seed as soon as ripe in December, dry it a couple of weeks, sow in peaty soil or pure Canadian peat moss. Sow in low flats and set in a fairly warm greenhouse. Prick out in flats before July 1, keep in a greenhouse the next winter and plant out in May in rows. Keep them growing vigorously to get thick bark and soft wood about pencil thickness or a little less, pot up in September in 3- or 4-inch pots, keep in a frost-free greenhouse until January 1, then give more heat and they will be ready for grafting in two to three weeks. The old Dutch methods which have produced 80 to 90 per cent of the world's rhododendrons during the past 75 years are still the most common in the big nurseries.

(NOTE: See p. 18, Winter 1950, for additional information on grafting.)

ENDRE OSTBO
(Winter 1950)

Having recognized the fact that rhododendrons are calcifuge, that they enjoy a sharply

drained, vegetable soil, not necessarily peaty, and some shade from hot sun, much of our planting is done under woodland or semi-woodland conditions. But there are, of course, reservations in a genus so vast. Thus it may be taken as a sound rule that the smaller the leaf, the more exposure the plant will enjoy. Hence the adoption of such dwarfs as those of the *Lapponicum, Virgatum, Saluenense* and *Triflorum* series for rock gardens or other open sites.

A. T. Johnson
(Winter 1946)

. . . The second point refers to those rhododendrons which form in the wild what I call "table-tops," in height from two to six or seven feet, so closely interlaced that one can almost walk on the tops. Species in cultivation which grow in this fashion are *R. aperantum, R. apodectum, R. Forresti, R. russatum, R. sperabile.* We find that in old cultivated plants the centers tend to die out and ultimately the plant itself passes away. Now in the wilds most species that grow with table-tops live in wind-swept areas where snow drifts badly and entirely covers the plants. When spring comes, the melting snow falls off the plants in gobs, taking with it most of the old withered leaves. In other words, the snow cleanses and helps to let in light and air. Now, in this country we rarely have snow sufficiently thick or lasting to perform this grooming operation, and there is no doubt at all that the accumulation of old leaves and stems shuts off necessary ventilation and the plants suffer.

We have found from practical experience that plants of this type are much healthier if the center is cleaned of old leaves and garbage.

E. H. M. Cox
(Winter 1946)

. . . Any means of providing plants with better aeration will usually assist in reducing the amount of disease because of the fact that fungi require a certain amount of moisture or high humidity for their development. The more shade and the less aeration, naturally, the more humidity.

C. J. Gould
(Winter 1946)

## Rhododendrons for the Average Garden

Ignoring botanical classifications, rhododendrons can be conveniently grouped into three general subdivisions if one eliminates the azaleas, which are properly classified as rhododendrons. These subdivisions are the broad-leaved varieties, the narrow-leaved varieties, and the alpines, or rock garden varieties.

In choosing a limited number of each class for recommendation, it should be understood that those selected comprise a purely personal choice.

### Varieties with White Flowers

In the white group there are some which blush in bud, or open out a faint blush shade which later fades to white. The finest of these is *R. Loderi* 'King George' which is considered the finest white rhododendron ever grown. All the *R. Loderi* varieties are splendid and well worth growing. Among the other fine whites are 'Loder's White', with its frilled edge; 'Dr. Stocker', one of the early-flowering varieties; 'Beauty of Littleworth', a rival of 'King George' for top honors; 'Gomer Waterer', a very satisfactory doer; *R. decorum,* a species with delicate fragrance and splendid with madrona trees; *R. auriculatum,* a large-leaved variety which flowers in August and is therefore all the more desirable.

### Pink Forms

These varieties should be considered if one wishes to make the most of a grouping. 'Betty Wormald,' light pink, purple blotch; 'Alice,' 'Lady Stuart of Wortley,' 'Corona,' 'Faggeter's Favorite,' 'Mme. Fr. J. Chauvin'; 'Mrs. E. C. Stirling,' 'Mrs. Furnival,' 'Mrs. Philip Martineau'; also 'Christmas Cheer' and 'Rosa Mundi' for early bloom.

### Red Shades

This class embraces red, crimson, scarlet and all their variations. In reality many of the shades are quite distinct and do not harmonize when planted together.

The better reds, such as those listed here, are clear, pure colors of lovely texture and form. 'Earl of Athlone,' 'Unknown Warrior,'

*(Continued on Page 38)*

# AZALEAS

THE AZALEA PLANTING at the National Arboretum represents the basic selections from a project developed in the Division of Plant Exploration and Introduction. The project there was the creation of a race or races of winter-hardy azaleas that would have the widest range of colors and blooming seasons possible under the local climatic conditions. Winter temperatures often fall below zero and summer temperatures frequently rise above 100 degrees F., which, with frequent summer storms, gives a climate similar to but somewhat more rigorous than that of central Japan, where many of the species of the *Obtusum* subseries are native.

The Japanese species of azalea now known as *Rhododendron indicum* Sweet, *R. mucronatum* G. Don (and its color variants), *R. obtusum* Planchon (and its garden forms, the Kurume azaleas), *R. Kaempferi* Planchon, *R. yedoense* var. *poukhanense* Nakai, and the mongrel race of Indian azaleas common in southern gardens and much hardier to winter cold than is commonly believed, have been the basis of the work.

Another hope entertained in this project was the lengthening of the blooming season, which normally lasts only two or three weeks. Varieties have now been developed that bloom earlier in the spring and others that extend the season well into summer. Then, too, the color, size and form of flowers have been improved. Some new breaks in color have appeared.

MRS. O. B. THORGRIMSON
(Summer 1948)

The named hybrid azaleas, originated and introduced by the Division of Plant Exploration and Introduction under the general name of Glenn Dale hybrids, represent the results of a specific breeding problem conceived originally for rather definitely local conditions.

Stated concisely, the purpose was to obtain a race or races of winter-hardy azaleas that would have as large and varied flowers as those of the "Indian Azaleas" that make the southern gardens so spectacular through the late winter and early spring months.

It did not seem foolhardy to believe that using a group of parents, comprising the perfectly winter hardy *Rhododendron Kaempferi, R. mucronatum* and its forms, *R. indicum (Azalea macrantha)* and variants, *R. poukhanense,* and *R. obtusum* as represented by the Kurume azaleas, we might introduce blood from the "Indian azaleas" used as outdoor shrubs in the south, with a reasonable expectation that a decent proportion of the resulting progenies might be winter hardy and worthy of clonal propagation. This proved to be the case.

Experience has shown that no open-ground planting should be done here unless the main stalk is at least as large as a pencil and that the planting is done early enough for the plant to push masses of roots into the new soil. A light brush shade for the first winter is an additional safeguard.

*R. poukhanense,* again hardy beyond all question, is a parent that transmits large flower size and vigorous growth but dominantly lilac to lavender colors in the first generation and growth that is markedly like itself in all such combinations as we have made. *R. mucronatum* has been little used to date, but all of its progeny are easily identifiable as *mucronatum* seedlings and many are fine plants. Its chief fault is the production of a large percentage in which the corolla lobes are as narrow as they are in the form described by Wilson as *R. mucronatum amethystinum.*

The Kurume azaleas offer endless variations but have without exception reduced the flower size of the large-flowered species or clones in the resulting seedlings. *R. indicum,* as represented by *Azalea macrantha* of the trade, gives many winter-tender seedlings, tends to produce a narrow color range but has given some of our most surprisingly beautiful hybrids. *R. Simsii,* which is usually credited as being the most potent factor in the crea-

tion of the modern florist's Indian azaleas, now commonly called "Belgian azaleas" in trade papers, was available to us only as seedlings from a single Chinese collection. These plants are all hardy here and remarkedly uniform. All are clear bright rose pink in color and only moderately large in size. This race, if correctly named, is entirely winter hardy.

Of all these, under ordinary winter conditions, *R. indicum* is the most completely evergreen with some of the Kurume varieties almost as much so. In periods of extreme cold, the leaves become purplish bronze and curve in somewhat toward the stem but are never revolutely curved as are those of "rhododendrons" like *R. catawbiense* and its hybrids.

Fortuitous conditions favored our work the first season, for the various lots of plants assembled for the work had been grown in several distinct areas and none had been grown with a particular flowering date in mind.

The Glenn Dale azaleas are still under propagation. From the original, perhaps 70,000 seedlings, only a few more than 100 clones have been put into mass propagation. Several new types, in groups of more than three clonal variations, have still to be offered, and the local gardener (here) who thinks of azaleas chiefly as represented by too compact plants of such clones as *amoena* or *Hinodegiri* (and there are many such) is still the proverbial ignoramus!

B. Y. Morrison
(Winter 1946)

Among the various questions that have arisen in regard to the Glenn Dale azaleas is that concerning the order of their development. This is a question that can be answered best by saying that all were developed with breeding work in three years, and that none represent a combination of the seedlings themselves as none flowered within that three-year period. The only seedling used, and therefore very few crosses, was the best of a series of *Kaempferi* x *mucronatum* seedlings made personally and taken from my home garden for official use.

The next most difficult question has had to do with the possible usefulness of these azaleas outside of the area for which they were bred. No claim has ever been made that they will be good outside of that area, namely those portions of Maryland, Pennsylvania, Delaware and Virginia that have a climate like that of the District of Columbia. In this, as in any other breeding program, the first few years of work are primarily exploratory, no matter how carefully one may have studied his field and, since the project was stopped by reorganization, there is no reason to doubt that the excellent plants obtained in the first crosses cannot be bettered in future work, largely in refinements that appear as one progresses. Nevertheless, the main objects were accomplished, namely a widening of the blooming season early and late, a filling in of the gap between April and June groups, a diversification of color and pattern in all groups, and a production of a wide range of large-flowered clones cold-hardy in this climate. As a bonus, there were produced among all these plants in which the bush habit allows a probable maximum of 15 feet in some clones and of two feet in others, as well as plants with such fine evergreen foliage that they might be grown for that purpose even if they never flowered.

Since every conceivable type of parental combination was made within the limits of the materials assembled, it should be clear that the "Glenn Dale azaleas" are not all alike, nor do they have the appearance of a single race in any way save that all are obviously derived from members of the *Obtusum* sub-series.

B. Y. Morrison
(Winter 1950)

The group of azaleas which we call Indian azaleas derives its name from one of its progenitors, *Rhododendron indicum,* a native of China and Japan.

Over a hundred years ago horticulturists of Belgium, and particularly of Ghent, hybridized *R. Simsii, R. mucronatum (ledifolium), R. indicum,* with the hope of producing a free flowering plant. They achieved

what they had set out to do, but, alas, they were not hardy and only succeeded under glass. They entered into trade and in due course were sold in Charleston and Savannah. Most of them died, but a few of the more vigorous single varieties throve and from them have come the great number of azaleas that make the southern gardens famous.

But the double varieties are not much grown outside, even in the south. They, together with newer hybrids of the same breeding, remain the beautiful plants we see in the florists' shops from Christmas to Mother's Day, with the peak of their season at Easter.

About 95 per cent of the plants sold here never bloom again. If you would keep your plant, remember in the dry atmosphere of our houses it needs plenty of water. It will not be too wet if set in a shallow saucer filled with water. After the blooms have dropped and the weather is warm, about April 15 here in Seattle, repot your plant in a pot one size larger than it grew in. Use a good peaty compost. Then plunge the pot into a border where it will get sun at least one half of the day, or better, full sun if you are prepared to water it frequently. About June 1 shorten the new growth to make the plant branch and apply a little more liquid manure. Let it grow on outside until October 1 when you will bring it into a cool basement window if you have one. February 1 it will be ready to force again in a warm sunny window, and you will be well rewarded for your trouble.

S. A. Brainard
(Spring 1949)

The most important factor in raising rhododendrons and azaleas (from seed) is seed that is fresh.

Seed of the current year that has been well ripened will germinate practically 100 per cent; seed a year old will germinate poorly, and the plants will be weak; seed older than a year is not worth planting.

The next important thing is the germinating medium. I have found that baled horticultural peat moss, lightly but firmly packed in the flat or pan, and topped with ¼ inch of dry screened sphagnum moss, will give the best results. Sowing from January 1 to 15 is the best.

The plants will be sturdier if grown on a bench in a cool greenhouse, covered with a pane of glass until germination takes place.

Do not sterilize the peat, or use any fungicide. The sphagnum will help prevent damping off, and sterilizing will kill the mycorrhiza that seems to be present and which the plants need.

About two to three months from sowing, the plants are generally ready for the first transplanting. Again I use mostly peat moss, with about ⅓ woods leaf mold and a little sand. They can stay in the flats a year or so and are then ready to go out into a frame or the open ground.

Lester A. Brandt
(Fall 1952)

Deciduous azaleas, as meant here, are those which completely shed their leaves in winter. Most deciduous azaleas are included within that subsection of the genus *Rhododendron* set up by G. Don a century or so ago and dubbed the section *Pentanthera,* with reference to the fact that they bear only five stamens. A convenient modern device, which is merely a stop-gap, classifies the genus into "series" groups, in which the members of each group rotate around some average species from which that series derives its name. In this arrangement the section *Pentanthera* is called the sub-series *Luteum.* Two lesser subgroups include deciduous azaleas having more than five stamens, and these are the subseries *Schlippenbachii* and *Canadense,* respectively.

All the native American azaleas are deciduous, and these, plus one from Europe and a few more from the Orient, comprise the entire group. With the exception of the beautiful *Rhododendron occidentale* from the West Coast, all the American azaleas are natives of the East and South.

These deciduous azaleas do not appear to be recognized to the extent that they deserve. They possess a great range of color, including perhaps the best yellows to be found anywhere in the genus. They also possess a har-

diness not matched by the true rhododendrons, although this is linked up with summer water relations as we shall see later. Several species are delightfully fragrant.

. . . The various species follow one another into bloom, so that, in a collection, successive blooming can be made to extend over a period of ten weeks or more. The feature which is most satisfactory to New Englanders is the ability of some of the best deciduous azaleas to withstand winter temperatures of thirty degrees or so below zero without injury or special protection.

Regardless of how numerous or how wonderful the new Chinese rhododendrons and British hybrids may be, there are still reasons why some of the American azaleas are better than many of the new exotics.

A number of Ghent azaleas are surviving cold temperatures. Probably if one could test out a large number of the existing named varieties of Ghent azaleas, using plants growing on their own roots (for grafted plants are unreliable), a good many could be found which are not only beautiful, but which have ever-blooming traits . . . plus hardiness and other desirable qualities. While on the subject of Ghent azaleas, I would like to say a word regarding their origin.

A Belgian baker, named P. Mortier, raised a batch of hybrid seedlings of the American sorts crossed with the European yellow Pontic azalea, *Rhododendron luteum*. Similar crosses were made about the same time in England by Mr. Gowen, gardener for the Earl of Carnarvon. In Belgium a number of people around the town of Ghent continued crossing Mortier's azaleas with American and Pontic plants.

This group of deciduous azaleas, consisting mainly of well-known American sorts crossed *inter se* and with *Rhododendron luteum,* became known as the Ghent hybrids, and they have since been augmented by many more varieties.

Somewhere along the line, a double form appeared and this, bred into the Ghent race, produced a series of double and semi-double varieties in many colors, some very beautiful.

In the 1880's, the Koster firm in Holland started crossing the Ghent hybrids with the Mollis azalea, *Rhododendron molle* (and perhaps, *R. japonicum* too), from China, a yellow- or orange-flowered species, with much larger flowers. These plants came to be known collectively as the Mollis hybrids . . . for practical purposes the Ghent and Mollis hybrid azaleas might be regarded as one large group, varying widely and merging together. They possess an enormous variety of color patterns and flower forms, with all sorts of bright color . . . plants of the greatest beauty and interest.

Some years ago . . . I ran into some facts which prompted a few experiments. I found a few plants which bore tags indicating that they had endured in the Garden (New York Botanical Garden) for twenty years or more. Invariably such plants were growing in herbaceous borders where they were getting the benefit of summer irrigation. Other grafted Ghent azaleas, planted under ordinary rhododendron conditions, without receiving special water in summer, did not persist. Subsequent research indicated that the trouble rested in summer water relations . . . I have found that all azaleas of this general type are quite sensitive to summer drought, and grafting simply heightens the effect. Plants on their own roots are reasonably satisfactory. I have found, also, that any other factor which checks vigorous summer growth in deciduous azaleas will induce subsequent winter injury. It may be that the moist Puget Sound region is sufficiently congenial to permit these grafted plants to survive and thrive and perhaps establish their own roots eventually.

(Ed. Note: Own-rooted plants are to be preferred in the Puget Sound region, too).

Because one cannot obtain good own-root plants of hybrid and superior varieties of deciduous azaleas, the wild species offer the only alternative. These, however, are not to be decried, for many of them are as good as the hybrids.

The western *Rhododendron occidentale,* of

*(Continued on Page 42)*

# FLOWERING CRAB APPLES

*The following notes on flowering Crab Apples are taken from the* FALL 1947 BULLETIN, *"Flowering Crabapples Are Becoming Increasingly Popular," by Dr. Donald Wyman, horticulturist of the Arnold Arboretum, Harvard University, and from the* WINTER 1953 BULLETIN, *"The American Crab Apples," by Robert B. Clark, professor of horticulture, Rutgers University, New Brunswick, N. J.*

FLOWERING CRAB APPLES can be enjoyed the entire year, not only because of their bright cheery flowers in the springtime, but also because of their brilliantly colored fruits in the late summer, fall and in some cases during the entire winter. Fortunately, they can be grown over a wide area, under all sorts of soil conditions, in every place where apple trees grow well.

Their bright red and yellow fruits of varying sizes often start to color at the end of August and are of cardinal interest on the tree sometimes for a month, sometimes for an entire winter, depending on the variety and, of course, on the number of birds in the vicinity. The fruits of some varieties are used for making jelly, thus combining the aesthetic with the practical.

Although there are some hundred and fifty different kinds of crab apples offered by nurseries, it is not necessary to grow more than two or three kinds to enjoy their wide variety in flowers as well as fruits. There is a crab apple for almost every situation.

It should be remembered that crab apples are considerably hardier than Japanese cherries, often longer lived and so can be substituted for Japanese cherries in situations where the cherries do not prove satisfactory.

The length of time the crab apples remain in flower naturally depends in large part on the temperature during the days when the blossoms are open. With a cool atmosphere these plants may keep looking well for a week or ten days while, if the weather is very hot and humid, the chances are that the flowers will only last three or four days. This is particularly true of the single-flowered forms.

There are several double-flowering forms, one of which is the Chinese apple *(Malus spectabilis)*. Distributed by the Arnold Arboretum is 'Katherine' with double white to pale pink flowers sometimes two inches across. 'Prince Georges' is another double pink variety of merit, flowering late in May.

The following are interesting because of their purplish red flowers: 'Hopa,' 'Makamik,' 'Red Silver' and 'Sissipuk.' A few, like 'Redfield,' 'Redflesh' and 'Red Silver,' have leaves of a reddish tinge, sufficiently so to lend color throughout the summer to the green-leaved plantings in which they happen to be.

Edible fruited crab apples are: 'Florence,' 'Early Strawberry,' 'Red River,' 'Redman' and 'Trail.' Other dual purpose crab apples, good for ornamental purpose, while their fruits are large enough to make excellent preserves, are: 'Columbia,' 'Dolgo,' 'Hopa,' 'Rosilda' and 'Young America.' The 'Bob White' crab (and others also) holds its fruits a greater part of the winter.

Like apples, all crab apples are subject to "alternate bearing," that is, they will have a good crop of fruits one year and a poor crop the next.

Manchurian Crab *(Malus baccata mandshurica)*, a standard tree to a height of 50 feet or more. Its pure white flowers are the first of the crab apples to open.

Cherry Crab *(M. robusta)* has red or red and yellow fruits the shape of small apples, about ¾ inch in diameter. These are beautiful and prominent on the tree in the winter.

Tea Crab *(M. hupehensis)*. This gets its name from the fact that the Chinese often use its leaves in making a popular tea. This has a picturesque habit of growth with its long single branches originating low on the trunk and forming a beautiful wide-spreading fan.

Japanese Flowering Crab *(M. floribunda)* and the Carmine Crab *(M. atrosanguinea)*, both of which seldom grow to more than twenty feet, are good examples of dense and bushy growth. They are excellent in flower as well as in fruit. Planted against a dense pine wood, two Japanese flowering crab apples (light pink gradually fading to white) and directly in front of them a single specimen Carmine Crab (the flowers of which are a deep carmine), all blooming at the same time, were beautiful.

Midget Crab *(M. micromalus)*. For upright growth this is excellent. Its light pink flowers are typical miniature apple blossoms and exemplify the popular conception of crab apple flowers.

Arnold Crab *(M. arnoldiana)* originated at the Arnold Arboretum as a chance seedling in 1883. It has bright golden fruits and is one of the best of those with yellow fruits.

Parkman Crab *(M. Halliana Parkmanii)*. A very popular crab apple from Japan. It is the least hardy of all the crab apples, and also less vigorous than most. Flowers semi-double, carmine in bud, opening to rose pink.

*M. baccata columnaris* is fastigiate in habit while young, but in old age the fruits eventually are so profuse that their weight pulls the branches out of shape.

Cutleaf Crab *(M. toringoides)* has the best fruits of all. They are pear-shaped and not like large peas. When mature they are red on the side towards the sun, yellow on the side away from the sun, an excellent combination. They start to color in early September, remaining colorful and in splendid condition until successive frosts soften them (fig.1).

Bechtel Crab *(M. ioensis* 'Plena') is of outstanding interest because of its pink, rose-like, double flowers. It was found growing in a wood in central Illinois many years ago where it had grown for a considerable time undisturbed, until a business-minded nurseryman saw it and realized its potential commercial possibilities. 'Prince Georges' is very similar.

Sargent Crab *(M. Sargentii)*. For a small garden where there is room for only one crab apple. This never grows over about eight feet tall, although it may be twice as broad, and is excellent for small scale plantings. The flowers are pure white and the fruit, although small, is dark red.

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Mr. Robert B. Clark gives us some interesting information about American wild crab apples which he says are attractive in the springtime, with rose-like flowers of delicate pink with a delightful fragrance suggestive of violets. In fruit the color is usually green or greenish-yellow.

*Malus coronaria,* Wild Sweet Crab, is found in western New York growing 25 to 30 feet high in sunny thickets. An ideal subject for woodland borders, the double-flowered forms remain in bloom longer and are more conspicuous. One of these is 'Charlottae.'

*Malus glaucescens,* Dunbar Crab, is found in the Appalachian Mountains growing in

*(Continued on Page 40)*

Fruit of cut-leaf crab *(Malus toringoides)* in October

Fig. 1. PHOTO BY: DON NORMARK

# CAMELLIAS

THROUGHOUT THE AGES, nature, like an enchantress, has lured men over land and sea to the far corners of the earth to search out her treasures. As long as plants are grown such names as Fortune, Henry, Douglas, Farrer, Wilson and hosts of others will be remembered.

While many plants received their names for the men who risked their lives and fortunes to obtain them, others were named in honor of botanists, travelers, and missionary priests who were often naturalists as well, and who sent seeds and plants back to their former homes.

Camellias belong to the Tea family. Two species are well known. *Camellia Sasanqua* and *C. japonica.*

*C. Sasanqua,* the early flowering type, blooming from October to February, is graceful and desirable. Its forms have a smaller leaf and a more open habit of growth than *C. japonica.* The flowers are small, single or double; in color they are white, pink, or red of various shades, and have a rather sweet odor, underlaid with a musty, earthy smell.

*C. japonica* is the best-known species and its varieties are what we think of whenever the word camellia is mentioned.

In England and in other parts of Europe so much attention was given to the culture of *C. japonica* that by 1850 the number of varieties had become very large. Between 1839 and 1860 hundreds of forms were listed and described. Of course, many found their way to America.

The tendency at that early period was toward the very formal, very double, very symmetrical flowers and the shrubs themselves were also very formally pruned. This trend may have had something to do with the decline in the culture of the camellia, for, as one writer says, "They went out with the hoop-skirt, wasp waists, and poke bonnets." Low temperatures were also a very deciding element, particularly in the northern states. The delightful informal beauty of the single and semi-double varieties has since been recognized and has resulted in an awakened interest in both *C. japonica* and *C. Sasanqua.*

The time to fertilize is most important. As a rule, two yearly applications should be made. If your plants grow vigorously and are a healthy color (leaves dark green and shining) perhaps only one is necessary. If two applications are made, one should be early in February and the other not later than the last of June. Late applications prolong growth, which will then be too tender to withstand the winter cold.

As camellias are inclined to be rather stiff and formal in appearance, some thought should be given to proper placing. If they are put in the shrubbery border, soil conditions must be remembered. They may be used against the house, on any side, if the cultural requirements as to shade, drafts, drainage, etc., are observed. If space is available, a fine camellia garden can be developed by enclosing it within a hedge and by facing the hedge with shade-loving lilies. An untrimmed hedge of *C. Sasanqua* seedlings would be inexpensive and a protection to the more expensive *C. japonica* varieties.

To get the more desirable varieties, it is advisable to buy from a reliable dealer, in the smaller sizes and in bloom if possible. Do not be disappointed if your small plants do not produce flowers for two or three years. They cannot always make vigorous growth and set bloom buds, too.

Like the rhododendron, the camellia likes our cool, moist climate and gives great returns for very little effort on our part. Then, too, it adds interest to the garden during the winter and early spring months when most plants are hibernating.

MYRTLE R. THORGRIMSON
(Spring 1945)

This aristocrat of horticulture, whose history extends back almost two centuries, has, within the past 12 or 15 years, regained a

lot of its old prestige here in the United States. This renewal of interest can well be understood when we see the exquisite beauty of the flower. It is difficult to find any word other than "perfection" to describe it, with its certain stiffness, its frigid elegance.

In its native country, the single form of the common camellia was abundant in the woods, thriving in the shade of other trees, growing slowly but often reaching 40 feet in height, with a trunk as thick as a man's body and clothed with a perfectly smooth, gray, thin bark. And, though those trees were rarely without flowers, they were in full bloom in April. These wild flowers seldom opened flat but were more or less cup-shaped and perhaps for this reason were less valued for their beauty than for their fruit, which was gathered in October and pressed for its oil, which was in great local demand. It is said that the oil obtained from the seeds of *C. japonica* was used by the Japanese women for dressing their hair. The fruit is the size of a small, hard apple, a bright, shining, green color. When ripe the rind splits open, showing brown seeds.

How long before 1682 these shrubs had been growing in the gardens of the wealthy natives we can only guess, but we do know that by the year 1739 they were being grown in the English gardens of Lord Petre. In its native land this plant was known by the name "Tsubakki." It was in England that it was given the name camellia, named after George Joseph Kamel, or Camellus, a Moravian Jesuit priest. Sailing ships of the old East India Co. continued to bring choice varieties from Oriental gardens to England. Gradually they appeared in Belgium, France, Germany and Italy, where horticultural experts of each country proceeded in course of time to produce from the original strains of white, red, pink, single flowered sorts, the hosts of marvelously beautiful doubles, semi-doubles, peony and rose type flowers in all manner of rich reds, pinks, streaked and variegated colors through to the purest white. Very few double flowering camellias were brought from the Orient.

By 1860 there were more than 1,000 horticultural varieties and many publications were being offered with beautiful colored prints of the flower.

The first record of a camellia planted in the United States is a single red variety which was planted at Charleston in 1804.

At first camellias were treated as greenhouse plants. In Victorian days they were grown in conservatories. One such house in Hatfield, England, no less than 300 feet long, was at one time entirely devoted to camellias. It was said by one writer that the greenhouse has done us few worse wrongs than by spreading the idea that the camellia is a tender shrub. Its culture was so common in pots that little thought was given to it out of doors—yet it is hardier than many of our common evergreen shrubs. They have the advantage of standing a great deal of shade and drought. They produce a succession of bloom so if frost should kill one lot of flowers, another set replaces it. In their wild home in the forests of Japan, they are said to grow only where they are provided with perfect natural drainage and the overhead protection of large sheltering trees.

## Soil and Drainage

Any soil in which rhododendrons thrive will produce good camellias. Given this congenial soil, good drainage and shelter from winds and shade from excessive sunshine, the plants will not fail to thrive and give every satisfaction. Camellias also like a good diet and quickly respond to a top dressing or rich farmyard manure about February. Lime and bone meal should be avoided at all times.

## Watering

Best results are from careful and regular use of water in spring and early summer followed by a rest period throughout July and August. After hot, dry days the sprinkling of foliage in late afternoon or evening is a good practice.

## Pruning

No systematic pruning is required beyond what may be necessary to correct an ill-formed or ill-balanced shape, and this prun-

ing, if necessary, should be done immediately after the flowering time is over. Flowers should be cut sparingly when plants are small and then only with very short stems. Never break blossoms off the plant.

## Insects

Camellias are singularly free from serious attack by insect enemies. If attention is given to drainage, there will be few diseases or disorders to worry about.

Mrs. Donald G. Graham
(March 1942)

In 1792 Captain Connor of the ship *Carnatic* sent to John Slater in England plants of *Camellia japonica flore pleno striata* and of *flore pleno alba*. In 1811 Captain Welbank and Captain Rawes introduced the white peony-flowered form and also a white Sasanqua which became known as "Lady Banks' Camellia." This same Captain Rawes in 1820 brought to Thomas Cary Palmer the wonderful *C. reticulata,* still considered the finest camellia of them all.

Horticulturists were now able to cross and produce their own plants and some of our best varieties date from the early 19th century.

The vagaries of fashion have had a tremendous influence upon the development of camellias, ranging in their history from extreme appreciation to complete neglect. By 1870, or soon after, the vogue for camellias went out completely and, except for the explorers who occasionally sent plants home to an uninterested world, nothing whatever happened.

Renewed interest in them probably started in England when it was found that the plants were hardy in most parts of the British Isles. The interest continued throughout the years as the plant explorers sent there the results of their expeditions so that hybridizers were thus able to make outstanding achievements.

Camellia nomenclature has drifted into incredible chaos so that one hesitates to touch upon the subject. This confusion is due in a large measure to the vast number of plants which have been pouring in from Japan for many years with unpronounceable names, so that nurserymen have given them new ones of their own choosing. Sometimes the same camellia is given one name on the Pacific Coast and another on the Atlantic.

Mrs. Van W. Anderson
(Summer 1946)

With the discovery of gold near Sacramento in January of 1848, attention of the world became focused on California. Not all of the persons who joined in the gold rush were interested entirely in mining. One of these men was Mr. Warren, who started a business in Sacramento in 1851.

The following advertisement appeared in the *Sacramento Union* under date of February 7, 1852: . . . "A splendid set of Dahlia Roots, Roses, CAMELLIAS, Grape Vines, Bulbous Roots, etc., will be ready for examination in our hall over the store, on Monday. Warren & Co's New England Seed Store, J Street near Levee." This advertisement is the earliest printed information concerning camellias in California.

Camellias were offered for sale in San Francisco as early as February 2, 1854. The Smith Gardens at Sacramento in 1858 contained over forty varieties and a few plantings in the San Francisco area may have equalled or exceeded that number. The oldest specimen of which a definite record has been maintained was planted in 1860 about twenty miles below Sacramento and continues to be a consistent bloomer. Other specimens may be older, but records of their planting are not available.

A. E. Morrison
(Winter 1948)

## Diseases

Although camellias are fortunately not often affected by serious disease in Western Washington, a few minor ones do occasionally cause some damage. Success in the battle against diseases is often primarily a matter of maintenance of good cultural conditions.

## Cork Spot

It first appears as a brownish, somewhat translucent spot on the underside of the leaf, later becoming dry, brown, raised and corky, and varying from small and circular to ¼

inch or more and irregular in size . . . a non-parasitic disease caused by fluctuation in soil moisture and transpiration. Plants grown in water-logged soil often have it. It appears that wax emulsion spray, properly timed, will control the disease. However, local tests may be desirable to determine the safest material, concentration and conditions of application.

### Yellow Mottle Leaf (Virus)

The yellow variegation of leaves may be either a natural (genetic) condition or a disease caused by a virus. Affected plants grow quite normally, but the leaves are more susceptible to sunburn and frost injury than are normal leaves.

### Dieback and Canker

May appear as a rapid wilting and death of young twigs, with the leaves turning brown, or as a dead, discolored area on the stem. The latter may be completely girdled, resulting in death of the terminal portion. Killed buds should be removed promptly. Likewise, all stems with cankers and dead twigs should be cut out and burned.

### Bud Drop

Bud drop has been attributed to severe frosts in September and October, to severe freezing weather during the winter, and to an irregular water supply.

### Sunburn

Sunburned areas appear on leaves as faded green to brown dead areas with indefinite margins. Partial shading should be beneficial. Mulching may also help.

### Leaf Spot

Leaf spots are usually brown and may be small or large. However, they are generally unimportant on camellias.

### Flower Blight *(Sclerotinia camelliae)*

This is potentially the most serious camellia disease that has appeared in the United States. The disease has been found in plants shipped into Washington from infected areas, but to the best of our knowledge it has not become established here. Sanitation is the best control that has been devised for this disease. Since only flowers are infected, all flowers, both on the bush and on the ground, should be removed from infected plantings. Burn such material. Do not put it on a compost pile.

### Root Rot

This is another disease that has not yet been found in Washington. The fungus is widespread over most of the United States on many different hosts. Therefore, we should be on the lookout for it. The roots are rotted, resulting in a gradual wilting, yellowing and death of the leaves on one or more branches. Affected leaves may fall prematurely. Small plants and cuttings succumb more rapidly than older plants. Diseased plants should be discarded and the soil sterilized with formaldehyde before planting. Poor drainage favors the fungus and should be avoided.

### Algae Spot

Not strictly a disease but merely a layer of algae growing on the surface of leaves or stem. If it is a problem, spray once or twice with a copper-containing fungicide.

### Sooty Mold

Camellia leaves are sometimes partially or entirely covered with dark, soot-like mold. This is a fungus growing on the excretions of an insect, the soft brown scale. Spray in February or March with six tablespoons of a summer oil emulsion plus one teaspoon of nicotine sulfate.

CHARLES J. GOULD
(Summer 1953)

Camellias are propagated mainly to create new varieties, to reproduce existing varieties.

Propagation may be from seed, from cuttings, by grafting or by layering. Layering is a method seldom used and perhaps of little value except to a hobbyist. It is through the propagation by seed that many of our new varieties have been created. This again is mainly work for the specialist, for much time and patience is required to bring a plant up to the blooming stage.

Of methods used to reproduce existing varieties, propagation by cuttings is by far the most prevalent. Grafting has certain definite advantages, but since it is a more expensive operation than growing from cuttings, it is used mainly to speed up the re-

production of new varieties, to get the maximum number of plants out of a variety where grafting or scion wood is scarce.

The first and foremost thing for any propagator to learn and remember is that the best plants are produced where health and cleanliness are given first consideration, both in parentage and in offspring. Select healthy, vigorous parent stock to take the cuttings from. While cuttings may be taken at almost any season of the year with varying degrees of success, the best percentage is generally obtained by taking the wood in the summer time; in the Pacific Northwest it is seldom before June 15, or probably July 1, that the wood is right. The terminal buds should have set and the wood attained a certain brittleness, which an experienced propagator will recognize at once by running the thumb and forefinger over the wood. Experience has taught that certain varieties propagate better earlier in the season and others later. A cutting with three or four eyes below the terminal bud is to be preferred, if there is plenty of wood available. On the other hand, where wood is scarce, a single eye can be made to produce a plant. The cutting is made with a slanting cut, so that more of the cambium is exposed for rooting surface.

The use of hormones or rooting compounds has been found to be beneficial. In the case of the amateur, probably the powders are the easiest to use and are most to be recommended. However, many commercial growers continue to use the liquid forms, such as indolebutyric acid in solution. A sharp, coarse sand is probably the best rooting medium, although some growers prefer to introduce a certain amount of peat into the sand. It is essential that the sand be well packed both before the cutting is introduced and around the cutting after it is put in. Cuttings may then be inserted one inch deep.

Assuming that the sand is thoroughly saturated before planting begins, it should never again be allowed to dry out until the cutting has developed roots and has been removed. Assuming that the sand beds are on benches in the greenhouse, it is advisable to use additional covering material over the cuttings, cheese cloth on frames being acceptable. Such covering should be removed after two or three weeks, or a dropping of leaves may occur. During the period of time required for rooting, an even, correct temperature is essential. Bottom heat, preferably electric, helps to maintain this even temperature, which should start at about 45 degrees, and step up to 55 or 60 degrees, as the cuttings callus preparatory to making root. This may be from three to five weeks after they are planted. Under proper conditions from two and one half to four months are required before the plants can be removed from the sand. They are then transferred to pots or flats, the soil mixture twelve parts loam, eight parts peat and one part sand. Commercial fertilizer should never be used in soils thus prepared, but a small amount of cow manure, if old and well rotted, can be beneficial. Charcoal used in the soil is, however, extremely beneficial. The popular consensus of opinion is that charcoal sweetens the soil. Actually it serves as a storehouse for certain chemicals and plant foods which are in the soil and air, releasing them only as the plant roots need them and can absorb them. Newly potted cuttings should be kept under glass until all danger of frost is over in the spring. They may then be brought out, but preferably kept under lath during the summer. In this way they are hardened off, so that by the time the first winter arrives they are able to stand the shock of cold weather.

The same care should be used in selecting graft wood or scion wood from the parent plant, and a healthy, well-rooted understock, preferably not less than lead pencil caliper, should be selected. For conservation of space in the benches, a plant in a 2½- to 3-inch pot is to be desired, but this is not entirely necessary. Many growers use *C. Sasanqua* for understock; others use seedlings.

While there are many methods of making grafts, the two most generally used are side graft and cleft graft. The side graft is best used on stocks of smaller caliper. In this method, the knife is brought into contact

with the bark of the understock about an inch above the pot level, and is brought downward for a half inch or so with a slanting cut, so that at the base of the cut, the knife has penetrated somewhat into the woody portion of the plant. This cut portion of the plant is then removed by either cutting directly in or slightly downward at the base of the first cut; the piece thus removed will be slightly wedge-shaped. The scion which is to be inserted is then cut with a long slanting cut, made to fit the now exposed portion of the understock. The scion and the opening in the understock are then fitted together as smoothly as possible, keeping in mind that there must be contact of cambiums at least on one side, and if the scion and understock are the same caliper, then the cambiums on both sides should be in contact. The scion is then firmly fastened to the understock by wrapping with either wax string, raffia or rubber grafting bands. The latter is probably preferred, since it provides flexibility when growth and expansion starts.

Plants are now placed in the grafting box or bed, pot to pot, canted slightly at an angle of about thirty degrees, with the graft up. This is to lessen the possibility of moisture getting into the newly made graft. Pots are sunk in this peat bed to the depth of the pot, this providing moisture through the pot throughout the period of graft development. The beds are then covered solidly with either glass or some other form of fairly transparent protective material. With the frames down tightly, transpiration occurs, due to the heat generated by the plants themselves or by the electric or other bottom heat used. A sweating results which is beneficial to the plants, but the moisture must not be permitted to drop down on the plants. To prevent this the frames are carefully removed several times a day and the moisture drained from them. As soon as the union has taken place and growth of the scion has started, the frames should be raised a little to admit air, gradually at first, then more and more, until finally the frame may be removed completely and the plant exposed permanently to the open air of the greenhouse.

Soon after this, it will be time to remove all of that portion of the understock which is above the point where the scion was inserted. This should be a clean cut, just above the union, and is one of the most delicate operations of all, since it is very easy at this stage to weaken the union and thus prevent the flow of sap up into the newly forming plant. The pots are now returned to the benches in an upright position and, since they are out of the peat, care must be taken that they are kept with the right moisture content at all times. The new grafts may be kept in the greenhouse until spring, when it will generally be found that the root growth is sufficient to justify repotting them into a slightly larger size pot. By about June 1, they are ready to be brought out into the lath house for hardening off.

Cleft grafting is to be preferred when the diameter of the understock approaches a half inch. The main stem of the plant is cut off at whatever height is desired, normally at about an inch or so from the ground. It is then split with a sharp knife to a convenient depth for insertion of a scion. The scion is prepared for insertion by making a straight, smooth, wedge-shaped cut. The scion must then be inserted in the split so that, as in the case of the side graft, the cambium layers on one or both sides come in contact with each other. From then on procedure is the same as for the side graft. Frequently, however, grafters prefer to use a cold wax about the point of union to cover all open areas.

Perhaps something should be said regarding the method used in converting unwanted varieties over to those more desirable. Plants of almost any size diameter of trunk can be cleft grafted. This is usually done in the spring of the year, just before growth starts, probably from the middle of February to the end of March. The trunk of the bush or tree to be grafted is cut squarely off, several inches above the ground. Using a grafting iron or heavy knife, it is then split to a depth of one and one-half to two inches. The opening thus made is then spread by using the

end of the grafting iron, a screw driver or any wedging tool, and the scion inserted so that the cambiums come together. With careful removal of the wedging tool, the scion will be held in place. One, two or even four scions can be placed in a single stock, depending on the size of the stock. If the stock is fairly small and the tension is therefore not heavy enough to hold the scion in place, it is advisable to wrap the end of the stock with waxed string. Some prefer to use grafting wax to cover the cut end, but this is not entirely necessary. A sandy loam of some kind, which will provide good drainage, should then be heaped up over the end of the stock and over the scion until all except the tip of the terminal bud is covered. A wide-mouthed glass jar of some kind may then be placed over the graft, so that moisture may be maintained, and also an even temperature held about the scion until the graft has taken. Shade, probably burlap sacking, should be put over the glass. Moisture must be maintained about the roots of the plant while the union is taking place. The shade may be lifted from time to time to follow the progress of the union. When it appears that union has taken place and growth has developed a short distance, the glass covering may be raised slightly on one side to permit a small amount of air to enter. By degrees, over a period of several weeks, the glass can be entirely removed, but the shading should be kept on for a while until the new growth is entirely hardened. Direct rays of the sun can be quite destructive to new foliage at this stage of growth. Since the root structure which has been formed to feed a much larger plant now feeds a few small scions, it follows that growth will be rapid when once under way, and the size of the new variety thus created will in its first year attain height in proportion to the age of the understock.

PAUL E. DOTY
(Winter 1948)

During this century the repertory of camellias has been enriched by the introduction of two outstanding species, *C. saluenensis* and *C. reticulata* in its wild single-flowered form. *C. saluenensis* has already been crossed in England with at least three other species, *C. japonica, C. cuspidata,* and *C. reticulata,* and with *C. reticulata* 'Semiplena' (the semi-double garden plant which was long supposed to be the typical *reticulata*). Whether it has yet been crossed with *C. Sasanqua* or *C. oleifera,* I do not know.

The most important of these crosses, so far, has been the one with *C. japonica.* The late Mr. J. C. Williams, of Caerhays Castle in Cornwall, who was one of the original recipients of Forrest's seed of *C. saluenensis,* was quick to realize the possibilities of this cross, and out of his very numerous hybrid seedlings he selected two. One of these was named 'J. C. Williams,' after his death, and in March, 1942, received the First Class Certificate of the Royal Horticultural Society; the other, named 'Mary Christian' after his wife, won an Award of Merit at the same time. *C.* 'Donation' is a cross between *C. saluenensis* and *C. japonica* 'Donckelarii.'

*Cuspidata* is a disappointing plant, pretty in foliage but ineffective in flower, since the white flowers, 1½ inches across, fall too quickly. But the cross with *C. saluenensis,* made by J. C. Williams, yielded one of the best white camellias, 'Cornish Snow.'

The crossing of *C. saluenensis* with *C. reticulata semiplena* yielded 'Salutation.' The flowers are large with waved petals, recalling the flowers of an old-fashioned rose.

*C. saluenensis* has recently been crossed at Exbury, Hants, with *C. reticulata,* the wild single-flowered type.

I hope that, amongst those that will be tried, the following will be included. *C. saluenensis* x *C.* 'Jupiter,' the latter being a very fine single red *japonica.* I should like to see crosses made with good forms of *Sasanqua.* In particular it would surely be worth trying to get scent into this race, by crossing *saluenensis* with the fine plant now called *C. Sasanqua* var. *oleifera,* with a stronger and more pleasant scent than that common in *C. Sasanqua.*

*(Continued on Page 37)*

# FLORAL HALL

Seattle has long been famous as a city of flowers and our people are well known for their beautiful gardens and their interest in horticulture. The University of Washington Arboretum is in many respects the focal point of Seattle gardens and gardening.

Even with all our natural advantages and enthusiasm, we still do not have a suitable place for flower shows, floral displays or meetings of horticultural groups. To correct this situation, interested members of the Arboretum Foundation for a number of years have worked diligently to raise funds to make the Floral Hall possible. Great progress has been made, but your help is needed.

We earnestly invite you to share in giving to Seattle this center which it so greatly needs and whose benefits would extend on through the years. We particularly and urgently solicit your help now in order that the Floral Hall may become a reality in time for use in connection with the great Century 21 Exposition when so many visitors will form their impressions of Seattle.

Please send your contributions to the Floral Hall, % Arboretum Foundation, University of Washington, Seattle 5, Washington. By so doing, you will be making a lasting gift to your city, your fellow gardeners and the Arboretum itself.

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THE BUILDING consists of a circular exhibit hall approximately 170 feet in diameter with a memorial pool 35 feet in diameter in the center of the hall. This is open to the sky. The roof is composed of thin shell folded plate concrete construction.

There is an auditorium divided with adjacent classrooms to accommodate a total of 400 people for a meeting. Three classrooms may be separated from the auditorium by collapsible partitions. The auditorium has a level floor so that this area may be used for cut flower exhibits.

There is a service kitchen provided and a foyer approximately 20 feet by 50 feet off of which are Men and Women restrooms.

The entire building should be lighted in such a way as to compliment the displays at the interior, and exterior lighting could be very effective. On the east wall of the foyer a mosaic is planned to add color to that area.

WILLIAM J. BAIN & HARRISON OVERTURF
*Architects*

NEXT PAGE

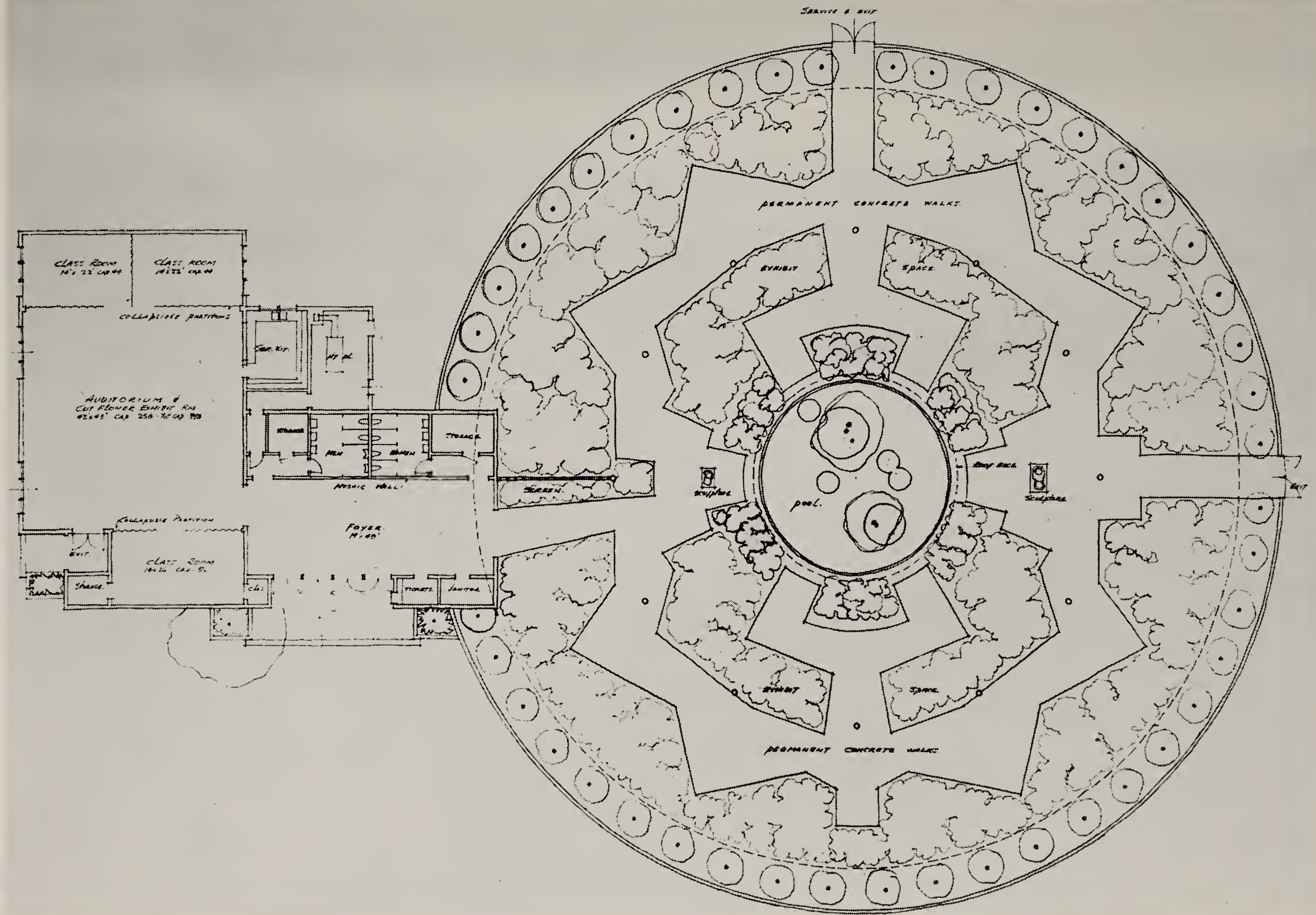
Ground plan of proposed Floral Hall in Arboretum

FIG. 2 PHOTO BY: WILLIAM ENG

FOLLOWING PAGE

Section of elevation (from west) of proposed Floral Hall in Arboretum

FIG. 3 PHOTO BY: WILLIAM ENG


Service & exit
Permanent concrete walks
Exhibit
Space
Class Room
Class Room
Collapsible partitions
Auditorium &
Cut Flower Exhibit Rm
Cap. 250
Storage
Men
Women
Storage
Music Hall
Foyer
Collapsible Partition
Class Room
Shades
Tickets
Janitor
Sculpture
pool.
Sculpture
Exit
Exhibit
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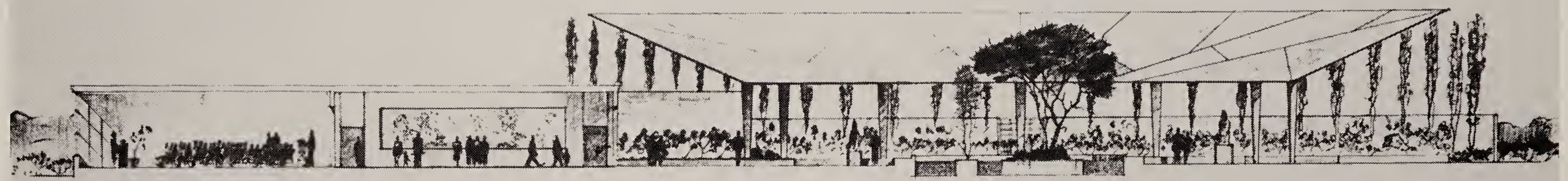
Permanent concrete walks



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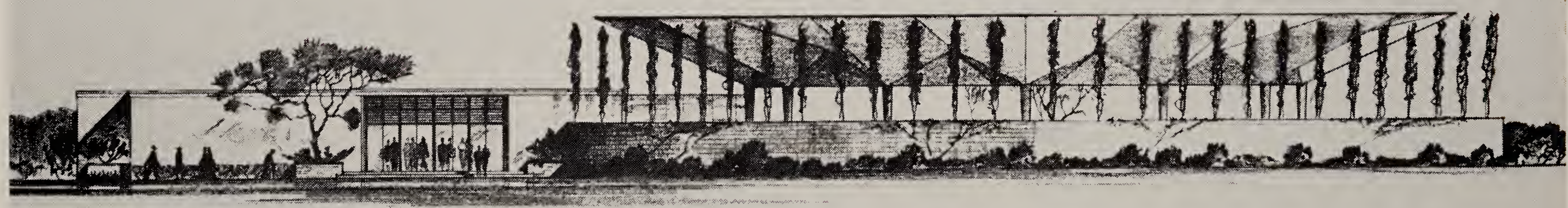

ELEVATION

# FLOWERING CHERRIES

*The following notes on flowering cherries are condensed from articles which have appeared during the last several years in the* ARBORETUM BULLETIN. *These articles were written by many well-known gardeners from the Northwest such as Mr. W. H. Warren, Director of Parks, Victoria, B. C.; Mr. D. G. Graham, whose garden is famous locally; Mrs. Elizabeth Hanley, of Hanleylands, near Medford, southern Oregon; Mr. Harold T. Abbott, formerly Superintendent of Parks, Spokane, Washington, and Mr. Robert J. Hansen, formerly Assistant Director at the Arboretum. Farther afield we have quoted from Mr. John C. Wister of the Arthur Hoyt Scott Foundation, Swarthmore College, Swarthmore, Penn., and from that famous authority and writer on flowering cherries, Mr. Collingwood Ingram of Kent, England.*

CULTURAL REQUIREMENTS of the cherry are so simple that they are frequently omitted. One absolute demand is for a well-drained situation, as the tree prefers a light, sandy type of soil. If your garden soil is on the heavy side, containing appreciable amounts of clay, you should consider substituting a flowering crabapple for the cherry. Very often a cherry will grow for a number of years on a heavy soil, then suddenly die with no apparent cause. Cherries respond well to feeding. Planting should be done as early as possible in the fall.

Very interesting is the information given us by Mr. W. H. Warren, Victoria, B. C., (March, 1942) accumulated during an intensive study over a period of ten years by the Parks Department in Victoria in its endeavor to find suitable flowering trees to substitute for forest trees on city boulevards. He states that generally speaking the double forms last longer in flower than the single types. The singles for the most part have more vigor and longer life.

Below is Mr. Warren's selection of flowering cherries considered best in Victoria Parks:

Single white; 'Tai-haku,' young foliage bronze;

Single pink; 'Choshu-hizakura,' foliage bronze;

Single pink fading near white; 'Yoshino,' young foliage bronze green;

Double white; 'Shirotae,' young foliage green;

Double pink fading to white; 'Shirofugen,' young foliage brown; 'Shogetsu,' young foliage green;

Double or semi-double pink; 'Daikoku,' young foliage light bronze-green; 'Fugenzo,' young foliage bronze; 'Yae-Kanzan,' young foliage bronze; *Prunus subhirtella* 'Fukubana' and 'Autumnalis.'

Mr. Warren in "Trees for Town Gardens" (Fall 1948) states: "If there is one point to be emphasized it is the folly of planting a tree which will ultimately be too large for its intended position and then having to butcher it back regularly to keep it under control. There is only one thing to do under such conditions and that is to remove such trees and plant smaller, slower growing types."

Amongst the flowering cherries 'Yoshino,' single white, 'Mt. Fuji,' double white, 'Shirofugen,' double pink fading to white, and 'Kwanzan,' double pink, are among the best, roughly listed in order of size and vigor. Amongst the Higan cherries *(Prunus subhirtella)* there are some good forms and also some poor ones. The fall blooming type 'Jugatsu-zakura' is a very interesting tree to grow in protected positions where it will usually bloom sparingly during mild spells throughout the winter. Two double forms of the Higan cherry deserve to be better known; the double red 'Momi-jigari,' and the double pink 'Atsumori.' Both are excellent spring-blooming trees.

*Prunus subhirtella,* the Higan or Equinox cherry, is one of the most promising for street planting. Also its many varietal forms and closely related species such as 'Yoshino' *(P. yedoensis),* Sargent's cherry *(P. Sargentii)* and the cut-leafed or Pygmy cherry *(P. incisa).*

*Prunus subhirtella* varies tremendously in habit and flower. A few are listed below.

'Beni-higan' has small pink flowers and is described as tall and upright to 60 feet.

'Ming-Shing' is of great loveliness, a fairly tall tree, upright, with interesting twiggy branches literally covered with delicate rose colored blossoms. An ethereal tree as dainty and sweet scented as a bride's bouquet. The Whitcomb cherry is a variety of *P. subhirtella*. It grows into a low-crowned spreading tree with rose colored flowers, larger than the type or 'Autumnalis' and longer lasting.

'Beni-shidare,' or Park Weeping, is a pyramidal weeping type. It was propagated from a pink flowered weeper growing in Golden Gate Park. New branches keep rising from the crown so that the tree gradually gains height. 'Ito-Shidare,' the thread-branched weeper, also known as 'Eureka Weeping,' is the common mushroom type. There is also a double pink weeping Higan, lasting longer in bloom.

'Autumnalis,' Jugatsu-zakura or October Bloomer. Most promising of all subhirtellas are the double upright forms. They are superior to the single in ornamental value. This is a double pink cherry which makes a wide crown. It usually starts to bloom in October or November and continues intermittently during frost-free weather until April. The flowers may be injured by frost but not so the buds, which continue to open successively as soon as the weather again becomes favorable. In providing winter color this tree has high value, particularly in sheltered positions.

'Fukubana' ('Momijigari'). This flowers later than all other Higan cherries and is a most profuse bloomer. It is pretty and distinct, quite unlike other forms of *P. subhirtella*. The branches are wreathed in cerise pink buds opening to double or semi-double, clear bright pink flowers. It is upright in habit until maturity when the tips of the branches take on a pendulous habit and are a lovely sight in March and April with clusters of flowers like tiny double roses, vivid crimson in bud opening to deep carmine red. The leaves are bronze when young and color well in fall. It is likely to become a great favorite when better known. We like it because of its long blooming period, which is characteristic of all double cherries, its attractive pink flowers, strong growth and autumn foliage. It is in bloom about mid-March and lasts for approximately 30 days.

*Prunus incisa* (Fuji-zakura), or cut-leaved cherry, is also known as the pygmy cherry. It resembles *P. subhirtella* but has a bushy habit. It may make a small, elegant tree 20 to 30 feet high, though more often it is a thickly branched bush 6 to 18 feet. It is extremely free flowering though the flowers are small, like those of *P. subhirtella,* and rather fleeting. Many times it blooms about March 15th and continues for approximately 15 days. The buds, calyx and flower stalks are red. The autumn foliage is excellent This cherry has many virtues; it is completely hardy, very floriferous and. has neat birch-like foliage; useful for hedges, tolerant of shade and will stand heavy pruning. A sturdy, stocky little tree, whether in sunshine or in shade, it is always happy and cheerful. Nothing seems to daunt its determination to flower and each spring it completely clothes itself in snowy blossoms which at a distance appear pink. It is interesting to note that at the Arboretum a young plant of *Prunus incisa* flowered normally in the spring following the disastrous early freeze of November, 1955.

The variety *viridi-calyx* is snow white, growth is vigorous and upright and the fall color is very good. Hybrids are 'Umineka' (Seagull) and 'Asor.' The former is extremely vigorous, flowers pink and fairly large.

*Prunus yedoensis,* or 'Yoshino,' is a vigorous growing early single flowering cherry making a large tree in a very short time. It makes long growth which should be thinned out and tipped back regularly, otherwise it is soon lanky. The long flowering stems give it a lovely light effect in full bloom. The autumn color is good. In mid to late March the pale pink flowers blossom in clusters of two to five along the stem.

The prolific planting throughout the Arboretum of the 'Yoshino' cherry indicates

the high regard expressed in its favor. The spectacular grouping at the Montlake entrance to the Arboretum is known to many. In November 1955 'Yoshino' was unharmed and flowered well in 1956.

There are a number of variations and hybrids of 'Yoshino': 'Akebono,' or 'Daybreak,' is a pink flowered form. Of this Mr. D. G. Graham has the following to say in the Spring, 1949 issue of the BULLETIN. "The improved pinker form known as 'Akebono' ('Daybreak') is one of the most beautiful flowering trees. When in bloom it is a cloud of pink with not a leaf in sight. It grows up to 25 feet high, spreading in habit, and is the earliest Japanese cherry to bloom in the spring. It is similar in type to those planted around the tidal basin in Washington, D. C., and to the 'Yoshino' cherry so widely planted in Tokyo."

*Prunus Sargentii,* Sargent's cherry, is rated highly. Rehder says it is the hardiest and most vigorous of Japanese cherries and very handsome in bloom. It is one of the best for park and avenue planting and is highly recommended for this purpose by all authorities. It prefers a cool climate and rich, woodland soil with sharp hillside drainage. It is intolerant of hot, hungry soil, wet soil or lifeless clay. It is a very fine cherry, flowers delicate rose-pink intermingled with the vivid copper-red young foliage, presenting a strikingly beautiful appearance and undoubtedly one of the best of its family. It is almost equally attractive in the autumn when its leaves change to varying hues of orange and crimson. If only one kind can be planted it should be this.

Mrs. Elizabeth Hanley (Summer 1947) states that this is the most beautiful of all the wild species. It is a large and long-lived tree. Dr. Ernest Wilson advises that this is the stock on which all of the class should be grafted to make them long-lived trees in America. Mr. Collingwood Ingram (Spring 1953) points out that: "One of its outstanding features is the shining mahogany brown color of its trunk and main branches —a feature which greatly enhances the beauty of its closely massed rosy-pink flowers." Mr. W. H. Warren states that this cherry appears to be exacting in its requirements and will not thrive unless it has ample moisture.

*Prunus serrulata* is the largest and tallest of the flowering cherries. It is thought that

Prunus 'Ukon'; close up of flowering branch
FIG. 4 PHOTO BY: WILLIAM ENG

many of the best varieties are derived from this species.

'Amanogawa ('Milky Way') is double pale pink, fragrant, with an upright habit like a miniature Lombardy poplar, useful for accent or a hedge. Mr. John C. Wister (Spring 1953) states that this fastigiate variety can be recognized at a glance in any collection. He differs slightly with the above, stating that it is semi-double, white to pale pink, and not particularly conspicuous compared to the others, but its upright form makes it important, particularly in a small garden.

'Kiku-shidare' is a stiffly branched weeping double pink. The pendent branches can be thickened by pinching the young shoots.

'Tai-haku' is considered to be the finest of the single white cherries. Flowers are large, with coppery-red young foliage. This was named in England by Mr. Ingram. It is said not to be known in Japan.

'Taizan-fukun,' a hybrid supposed to be of similar origin to 'Yoshino,' is very useful for avenue planting. It is a magnificent ornamental, a fragrant double form of the well-known 'Amanogawa,' but fuller, of semi-fastigiate habit, very double pale pink flowers, and is particularly valuable where space is limited. The young foliage is brown and fall color of the leaves is good.

'Takinioi' (fragrant waterfall) Mrs. Elizabeth Hanley considers the best of the single white group. The flowers are of strong fragrance. They are borne in clusters of three or four. The buds are pink but the opened flower is white.

'Mikuruma-gaeshi' (returning the royal carriage) is so spectacularly beautiful that legend has it that an early emperor, after passing, returned to view it again—hence its name. This variety has bronze-green foliage, deep pink pointed buds, flowers single, pink tinted, borne in grouped clusters of three to four. The individual flowers are two inches across.

'Fudan-zakura,' the Continuous Cherry, is interesting because of its habit of blooming in the winter, like Jugatsu. Its white flowers may be forced easily at any time during the winter.

'Choshu-hizakura' is a very fine broadheaded tree with clear pink single flowers. It is an excellent ornamental with long pendulous flower clusters which bloom before the reddish bronze foliage appears. It deserves to be more widely grown. This is the only single pink cherry of merit which does not fade to white soon after opening.

'Daikoku,' one of the best double pinks, is excellent in every way. Like 'Kanzan' it is upright in habit but with paler bronze foliage.

'Fugenzo,' another attractive double pink cherry, is equally as attractive in bud as in flower. Because of its flat-headed habit it may be trained for archways, planted 6 feet apart and 12 feet between the rows. Rated by Dr. Ernest Wilson as one of the loveliest of the rose colored varieties, it grows to be the largest and is probably the oldest cultivated. This and 'Shiro-fugen' are distinguished from all others of this class in having two tiny green leaves, known as carpels, folded in the center of the majority of their flowers.

'Horinji' is an upright growing cherry with double pale pink flowers which fade almost to white and open successively over a long period in April.

'Kanzan,' or 'Kwanzan,' best known double pink with young foliage of bronze, grows vigorously upright. The autumn foliage color is very good.

'Shirofugen' is a large widespreading tree with coppery-red young foliage, but the rosy pink flowers soon fade to pure white. One of the latest to bloom, from approximately mid-April for a period of about 30 days.

'Shogetsu' is a broad-headed small tree with bright green young leaves, double flowers which are very pale pink, white in the center. One of the latest to bloom, with about the same time and length of bloom as 'Shirofugen.' This tree is a favorite among all who know it. It makes a smaller tree than 'Shirofugen' but the flowers are superior.

'Tanko-shinju,' or 'Pink Pearl,' is a fra-

*(Continued on Page 36)*

# MAGNOLIAS

MAGNOLIAS, with their showy white, pink or purple flowers and handsome foliage, are among the most ancient, as well as the most cherished shrubs and trees in the world. The Chinese, centuries ago, characterized them as "Symbols of candor and purity."

There are about 35 species in cultivation, consisting of both deciduous and evergreen shrubs and trees. These come mainly from two separate areas, one group centering in eastern North America, with outlying members in Mexico and Costa Rica, and the other larger group being found in China, Japan and India, with outliers in Malaya and the Philippines.

Magnolias thrive best in a good, deep, rich, well-drained, moderately moist sandy loam, sheltered from strong winds and in full sun. They are best planted in the early spring just before active growth begins. The fleshy roots decay easily if bruised or exposed to the air, therefore the soil about the plants should not be tramped for fear of injury to the roots; instead the soil should be watered in around the roots.

When planting magnolias it is all-important that the gardener should be acquainted with their eventual size and shape and they should be planted where they will not eventually obstruct the view. In their early stages they should be surrounded with plants which can be easily removed. Dark conifers make a beautiful background for magnolias, though they should not be too near or where they are likely to exclude the sun. Freshly dug plants with a ball of earth are preferable to those with bare roots. In case branches have suffered from the cold or have been broken by the wind, they should be cut back as far as they are injured. This should be done in the spring.

MARY VIRGINIA GARDNER
(December 1943)

Asiatic magnolias vary in color from pure white, pink, lavender-pink, rose, rose-purple to the deep violet-red of *M. liliflora.*

The list of Asiatic evergreen magnolias is very meager, containing at best only three species; *M. Delavayi, M. nitida* and *M. Coco (pumila).*

The Asiatic deciduous magnolias are far more important in the number of species, varieties of types, in color and in spectacular beauty than the American deciduous species. They range in size from the shrubby *M. stellata,* native of Japan, "common in the woods around the base of Mt. Fujiyama" to the forest tree *M. Campbellii,* indigenous to the eastern Himalayan region. The first group to be considered consists of *M. stellata, M. Kobus,* and *M. salicifolia.* They are hardy and are distinguished by their many small, narrow-petaled flowers.

The next group includes *M. Sieboldii (M. parviflora), M. Wilsonii, M. sinensis* and *M. globosa,* found growing in Japan and Korea, on through China to the Himalayas.

Perhaps the most striking of the Asiatic species, which blooms after the leaves have unfolded, is *M. hypoleuca,* found widely distributed in the forests of Japan.

The next and final group include those Asiatics which bloom before the leaves appear. They are indigenous from Central China to the Himalayan region of northern India. Coming from latitudes so far south, these magnolias have not the hardiness of those found farther north and their blooming period is unfortunately much earlier. A number of these rather tender magnolias are being grown in the Pacific Northwest. *M. denudata* and *M. liliflora* are the hardiest of this group. Hybrids are *M. Soulangiana, M.* 'Lennei,' *M.* 'Alexandrina,' *M.* 'Brozzonii,' *M.* 'Alba Superba' and a number of others all taking their color from *M. liliflora* and their fine form and fragrance from *M. denudata.*

The last group, consisting of *M. Campbellii, M. mollicomata, M. Sargentiana, M. Dawsoniana,* and *M. Sprengeri* var. *diva,* bloom before the leaves appear.

MRS. O. B. THORGRIMSON
(Spring 1948)

### Seed Treatment

For several years the Arboretum has been obtaining seeds of Magnolia species from various sources both locally and elsewhere in this country, and from Europe, in order to eventually build up as representative a collection of plants as can be grown under our conditions of soil and climate.

When received the outer skin is first removed from the seeds; they are then wrapped in cheese-cloth and placed in a can of damp peat in a refrigerator at a temperature of 41° F., with those of a variety of other woody plants. There they remain for a ripening period of five to seven months before being sown in flats and placed in the propagating house (a lean-to type facing north). After germination, usually as soon as the two cotyledons are fully developed, the seedlings are picked out of the flat, potted individually and grown on in the greenhouse. Flats are then set outdoors in frames for the winter months and are not mulched or protected except for lath shades.

Mr. H. G. Hillier, in his paper on "The Propagation of Camellias and Magnolias"* says of Magnolias: "The seed is capable of remaining dormant in the ground for at least the first season; in fact it is quite usual to have a few seedlings germinate the first spring and the bulk not to germinate until the following year." This is similar to our own experience, though it suggests no reason for the occurrence; more data would be helpful.

B. O. Mulligan and L. J. Michaud
(Fall 1951)

The magnolia collection is located along the Upper Road, nearly opposite the south end of the nursery, adjacent to and south of Woodland Garden.

Perhaps one of the finest specimens as regards form is *Magnolia tripetala,* on the upper path of Rhododendron Glen. Called the Umbrella Magnolia, its large leaves are very distinctive.

Robert J. Hansen
(Winter 1947)

*(Continued on Page 41)*

*Published in "Camellias and Magnolias" (Royal Hort. Soc., London, 1950).

# Rainfall in Arboretum by Months, 1957, 1958, 1959

| | *1957* | *1958* | *1959* | *Mean (Weather Bureau)* |
|---|---|---|---|---|
| January | 3.51 ins. | 8.10 ins. | 9.29 ins. | 4.87 ins. |
| February | 5.80 | 5.83 | 3.52 | 3.72 |
| March | 6.40 | 2.82 | 3.80 | 2.99 |
| April | 2.08 | 3.56 | 2.43 | 2.14 |
| May | 1.58 | 0.96 | 2.53 | 1.70 |
| June | 1.79 | 0.80 | 2.70 | 1.38 |
| July | 0.66 | .. .... | 0.70 | 0.59 |
| August | 1.13 | 0.38 | 0.48 | 0.68 |
| September | 0.62 | 1.67 | 3.82 | 1.66 |
| October | 4.61 | 3.12 | 2.70 | 2.93 |
| November | 2.94 | 7.63 | 5.79 | 5.06 |
| December | 5.13 | 5.70 | 7.06 | 5.26 |
| TOTALS | 36.25 ins. | 40.57 ins. | 44.82 ins. | 32.98 ins. |

As will be noticed, there has been a regular increase of about four inches precipitation each year during this period; the figure for 1956 was 36.95 inches. July is usually the driest month, January or December the wettest. May, June, July and August 1958 were exceptionally warm and dry.

The Weather Bureau figures are recorded on the Federal Office Building in Seattle and cover a period of fifty-four years.

# The Garry Oak in British Columbia

W. H. Warren*

THEODORE F. SCHEFFER'S article in the 1959 fall issue of the University of Washington *Arboretum Bulletin* on the Garry Oak in Washington has an interesting parallel in British Columbia. The Garry Oak is the only Oak native to British Columbia and only grows on the east coast of Vancouver Island, the islands of the Strait of Georgia, north of the San Juan group, and at Sumas and Yale in the Fraser Valley. From Victoria they extend about 140 miles north to Courtenay, the northern tip of its natural habitat which is about 100 miles north of the 49th parallel.

One characteristic is noticeable—its habit of growing in open park-like groves or alternately in dense clusters. In either case they are usually associated with rocky outcroppings or shallow soil. Ancient stands may be seen killed out by faster growing Douglas firs. On rocky soil the growth is tortuous and often scrubby, hence the local name of Scrub Oak, once considered to be a different species. In good soil the growth is more regular. It forms the dominant tree in Oak Bay, suburb of Victoria. In Beacon Hill Park, Victoria, the largest specimen measured was four feet in diameter and 420 years old. Trees of similar size and age are found in the Duncan and Courtenay areas. This is interesting because dwarf specimens are usual towards the limits of a plant's natural habitat.

Trees around Victoria fruit freely. Acorns fall in September and October and many root immediately. By spring these roots are four to six inches and sometimes up to twelve inches long before any leaves appear, ample safeguard against the dry summer season.

Wild mallard ducks are very fond of the acorns. They fan out and progress along the ground eating all acorns in sight. Deer, too, relish them.

*Park Administrator, Victoria, B. C

Following are annual precipitation figures, mean January and lowest recorded temperatures where oaks flourish on Vancouver Island:

| | | | |
|---|---|---|---|
| Victoria (Landsdowne Road) | 27.9″ | 39°F. | 8°F. |
| Duncan | 46.2″ | 37°F. | -5°F. |
| Comox | 59.4″ | 34°F. | -6°F. |

In discussing ecological factors with Dr. Adam Szczawinski, provincial botanist, he believes that conditions of growth here are tougher, hence the greater yield of acorns in this area. It might be mentioned that the average rainfall for the four summer months in Victoria is 2.97 inches.

Very limited study has been given to the Garry Oak in British Columbia. Dr. Szczawinski has noted considerable variation in the pollen of the Garry Oak and this variation is believed to also apply to other characteristics of the species, and it may be that there are several races. The two stations in the Fraser Valley might have been established by Indians.

Everyone Is Invited
and *Urged*

to join in the big Clean-Up

WORK & FUN DAY

at the Arboretum

April 13—Arbor Day

9:30 A.M.

*Tree Planting Ceremony* *Prizes*

# The Arboretum Bulletin

Vol. XXIII No. 1 Seattle, Wash. Spring, 1960


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OFFICE HOURS
9 a. m. to 4:30 p. m.
Monday through Friday
Phone EAst 5-4510


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## *Special Notice*

To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. Active memberships more than three months in arrears will be dropped and The Bulletin will be discontinued.

*Arboretum Membership Blank*

| | |
|---|---|
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Seattle 5, Washington

I hereby apply for membership in the Arboretum Foundation and remittance for same is enclosed to cover dues for the next succeeding 12 months.

Name .....

Address .....

All memberships are non-assessable.

# Notes and Comment

Many a Pacific Northwest garden shelters one or more rarities not generally grown here, but healthy and happy in spite (or because) of climate, soil or environment. The Editorial Board is planning a new series featuring just such horticultural gems and asks that Bulletin readers assist in choosing those plants whose life stories shall be published.

If your garden, or any garden you have visited, has an unusual specimen, just write a few lines telling its present size and appearance, when and where it was acquired, in what form (seed, cutting, young or mature plant), in what exposure it is thriving, horticultural treatment to which it has responded (type of fertilizer, mulch, soil), and its reaction to frost. If you have a photograph we would be interested to see it.

Please help us in recording the diversity of plant material that is suitable for Pacific Northwest gardens, by sending this information to The Arboretum Bulletin, University of Washington Arboretum, Seattle 5, Washington.

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Following our yearly custom, the Arboretum office will be open on Sundays from 10:00 a.m. to 5:00 p.m. March 27th through to early June. Mr. J. A. Witt will be in attendance.

---

The Arboretum Foundation's 1960 "SPRING GARDEN TOUR" will be held on April 28. Five Gardens in Windermere will be open to visitors from 11:00 a.m. to 4:00 p.m. Tea and coffee will be served in the home of Mr. and Mrs. Albert O. Foster from 12 noon to 4 o'clock. Tickets are $2.00 each (all five gardens and tea) and may be obtained at the Arboretum Foundation office.

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The Editorial Board is anxious to receive more material for publication from the Units, to record their principal activities and projects in the pages of the Bulletin. Please let us have such details from time to time.

# PERRY B. TRUAX

Perry B. Truax died on February 29, 1960. Becoming a member of the Board of Directors of the Arboretum Foundation in 1937 he served on it continuously for almost twenty-three years, and for a period also as Vice President.

Out of the beautiful garden maintained by Mr. Truax in Windermere, Seattle, came gifts, both to the Arboretum and to friends, of unique and exotic plants and shrubs which Mr. Truax collected and maintained in his garden. His service to the Arboretum, not only as a Director of the Foundation, but also as a friend, was outstanding.

The Directors and staff of the Arboretum Foundation hereby acknowledge the debt the Arboretum owes to Mr. Truax and extend to his family their sincere sympathy.

D.G.G.

---

# BONSAI

YUJI YOSHIMURA, one of the top bonsai authorities in the world, will lecture on Bonsai culture at the Seattle Art Museum May 19, 20 and 21. His lectures will be illustrated by color slides and will be held in conjunction with a bonsai show at the Museum from May 16 through May 23.

What probably is of even greater interest to the growing group of do-it-yourself bonsai enthusiasts in the Pacific Northwest is that he will give advanced lectures and actual demonstrations at the Arboretum Clubhouse on two of the three days he will be in the city.

The first lecture series, which is designed for the general public, will be held at 8 p.m. on the 19th, 1 p.m. on the 20th and 2 p.m. on the 21st. Don't plan on attending all three unless you are really interested because they are identical. The lecture-demonstration courses at the Arboretum Clubhouse will be held at 8 p.m. on the 20th and 10 a.m. on the 21st. They come under the heading of "Advanced Bonsai Culture" and should be of major interest to persons now engaged in bonsai culture because Yoshimura is a "second generation" expert who was introduced to the subject when he was two years old. He's the founder of Japan's first practical course in bonsai culture for foreigners. He owns the Kufo-en Nursery and Bonsai School in Tokyo, and is co-author of a bonsai textbook with the imposing title: "The Japanese Art of Miniature Trees and Landscapes: Their Creation, Care and Enjoyment."

For the benefit of the uninitiated, here's what "bonsai" means: the first character for "bon" means tray and "sai" means to plant, so a bonsai is a planting in a shallow pot. This refers, then, to a single plant or a number growing within the confines of a small root area, which restriction, combined with educated pruning, causes them to stay dwarf in size.

This is an ancient culture in Japan, where they have small houses and sought to bring authentic samples of natural scenes indoors; learned how to prune and train trees into scenes found on a large scale outdoors and yet have plants only a few inches or a few feet high. For instance, a picture taken of a bonsai planting without anything in the picture for size comparison, such as a table or chair, looks like a grove of trees perhaps a hundred feet high.

The culture here has developed an increasing number of enthusiasts and it is their bonsais, for the most part, that will make up the show at the Museum. Most of them have been obtained in our own mountains and trained by local people, although a few have successfully been imported from Japan in spite of the rigid plant quarantine regulations concerning such importations. Being compara-

*(Continued on Page 33)*

# ARBORETUM NOTEBOOK

*This section is particularly designed for notes, information and queries concerning beautiful or unusual plants from growers of all types or experience. We solicit your remarks and ideas, but space limitations may sometimes restrict us to publishing those of the widest interest.*

## *Garden Hints*

### MARCH

*Tradescantia virginiana* is a fine plant for damp places in the garden; the bright sapphire blue blossoms are striking in any location. Also it is obtainable in shades of white or pink. Bloodroot, in the shady garden, is a fine contrast to most early growth. The flat leaves are attractive and the white blooms beautiful.

### APRIL

April is usually considered to be the best time to take cuttings of the *carnea* group of heathers. One should select young, tender shoots; then pull them downward, so that the cutting comes off with a tiny heel attached to it. The cutting should be removed at a junction between the new and old growth. Other heathers may be propagated in late summer.

### MAY

Honeysuckles are always attractive as climbing plants. Although they like to have their heads in the sun, their roots should be in broken shade. One of the best of the evergreen species is the "Scarlet Trumpet" *(Lonicera Brownii fuchsioides)*. It produces blossoms nearly all summer and is not too tall to use against a moderately high wall. *Halliana,* one of the best of the *L. japonica* group, has richly scented flowers, turning from white to primrose as the blooms age.

Hydrangeas improve when a weak solution of liquid manure is applied when they are coming into bloom. May is also a good month for planting chrysanthemums.

---

Much to the dismay of my gardening friends I move my rhododendrons from one part of the garden to another, no matter how large the plants are. Common opinion seems to be that a rhododendron does not like to be moved. I have not found this to be so. Whenever a plant is not doing well I move it to another part of the garden. I move it if it does not set buds and bloom. When the leaves of the plant look ragged or eaten or turn yellow the plant needs a different location. I took a truck load of large plants to the rhododendron show in Seattle when they were all in bloom. After they were back in place in the garden I watered them and they went on blooming and growing as though they had never been moved.

Now I can quote to my friends from Lord Aberconway's article in the July English Journal of The Royal Horticultural Society: "Whenever a rhododendron is looking a bit ill, I give it a little carriage exercise and this generally cures it." I use a wheelbarrow.

R. C. DeClements
(Winter 1946)

My ten favorite shrubs and trees:
*Hamamelis japonica*
(Japanese Witch Hazel)
*Magnolia Grandiflora* 'Exoniensis'
Japanese Cherry 'Mt. Fuji' ('Shirotae')
*Cornus Kousa*
*Oxydendron arboreum* (Sourwood)
*Daphne odora*
*Skimmia Foremannii*
*Camellia japonica*
('Madonna' or 'Finlandia')
Rhododendron 'Earl of Athlone'
*Sarcococca ruscifolia*

Phyllis Ballard
(Spring 1948)

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## Gentiana sino-ornata

### *Gentiana sino-ornata*

THOSE who have struggled with this gorgeous gentian and have never been able to eliminate the unsightly brown patches throughout the bed may be interested in my experience. I have grown it for years but invariably with very disappointing results.

The 1944 crop was the worst of the lot, and in sheer desperation I decided to try something revolutionary. Spraying did no good for the trouble was clearly traceable to some insect eating the roots. In the middle fall after the blooming period, all plants were pulled up. Every fragment, roots and all—that is, what roots the bugs had left—was washed in water and replanted in a soil consisting largely of alder leaf mold and chopped fern roots, with just enough loam to give it good body. As each fragment was planted it was puddled in nursery Volck, in the proportion of one pint of Volck to three gallons of water. The result was astounding! Notwithstanding the complete destruction of the roots of many of the units planted, all of several hundred plants, with only one single exception, grew to perfection. There was no recurrence of brown patch and I think the discovery is very much worth while. The bed is a gorgeous sight as this memorandum is written.

P. B. Truax
(Spring 1946)

APRIL . . . If hellebores must be moved this is a good time. They should have, whether moved or not, a mulch of well-rotted manure.

Polyanthus primroses may be lifted, divided and replanted directly after flowering. This is true also of *P. Auricula* and *P. Juliae* and her many hybrids.

A birch tree is very pleasing when planted among the rhododendrons; also *Cercis Siliquastrum* gives an airy touch to the sombre dark green of rhododendron foliage.

Sargent's Cherry is beautiful with *Azalea Schlippenbachii* and *A. Vaseyi* planted under it.

(Spring 1952)

Some little-used plants for shady gardens or north sides of houses.

| | |
|---|---|
| Corydalis | Omphalodes, especially |
| Dicentra | *O. cappadocica* |
| Pulmonaria | Vancouveria |
| *Anchusa* | Synthyris |
| *myosotidiflora* | Hardy Cyclamen |

(Spring 1951)

## Bonsai

*(Continued from Page 31)*

tively new to the Pacific Northwest there won't be any like those in the palace of the emperor of Japan which are estimated to be between 350 and 500 years old.

Yoshimura, however, points out that beauty, not age, should be the criterion.

The local bonsai group held its first two years ago. It was a huge success. It is their hope to have a permanent bonsai collection at the Arboretum (there are only 2 others in this country) and to form small classes, perhaps next fall, for the study of bonsai culture.

---

## ARBORETUM PLANTINGS; Sept. 29, 1959 to March 22, 1960

During this period of almost six months 747 young trees and shrubs were set out in the Arboretum, the majority into what we hope will be permanent locations. These plants belong to no fewer than 77 different genera, and range in size from small shrubs such as Penstemon, Sarcococca and Calluna to large tree types represented by oaks, pines, lindens and swamp cypress.

Of the total, one-fifth (150 plants) are trees, and of these 40 are conifers, belonging to ten different genera (pines, firs, spruces, junipers, cypress, etc.)

Among the more interesting or unusual items is a group of *Camellia Williamsii* hybrids, appropriately placed in the Mary E. Williams memorial camellia garden; a collection of eleven kinds of box, of which eight are forms of *Buxus sempervirens* from southern Europe, all grown from cuttings received from the Morris Arboretum, Philadelphia, in November 1956; these are now growing on the hillside below the hollies. A large collection of the shrubby Penstemons, both species and hybrid forms, has been planted on the sunny southwestern slope of the rock garden where they should thrive. These were a welcome gift from members of the American Penstemon Society.

Among trees we have set out a new group of swamp cypresses *(Taxodium distichum)*, in case our older plants are lost when Empire Way is developed northwards through the Arboretum; others of the handsome Santa Lucia fir *(Abies bracteata)* from California, so far quite hardy here, and of the beautiful Mexican *Cupressus lusitanica*, which may not be; our first specimen of the Himalayan horse-chestnut *(Aesculus indica)*; spruces from China *(Picea asperata* and *P. gemmata)*, Japan *(P. Glehnii)* and Yugo-Slavia *(P. Omorika)*, and more of the larger magnolias, including the handsome *M. Veitchii*, in the camellia garden.

B. O. M.

# BOOK REVIEWS

A Handbook on Breeding Ornamental Plants —*Plants & Gardens*. Brooklyn Botanic Garden, Summer 1959. Price $1.00.

PERHAPS as a result of increased leisure time, and certainly because of the expanding interest in gardening, plant breeding by the amateur has become more and more important in the field of ornamental horticulture. Certain classes of plants, for instance iris, rhododendrons, dahlias, are being worked on by only a few professional hybridizers, and by great armies of back-garden dabblers. This is a field that anyone with a little knowledge, a little patience and above all more than a little imagination can have a barrel of fun and at the same time may produce a plant of considerable merit.

Yet most books written on this subject are for the professional, or at least the advanced amateur, so this, the thirtieth handbook published by the Brooklyn Botanic Garden, is doubly welcome. Its 113 pages are crammed with such subjects as "Plant Breeding as a Hobby," "Fundamentals in Plant Breeding," "The Differences Between Mitosis and Meiosis," "The Role of the Amateur Breeder."

In addition to this basic material there are numerous discussions of hybridizing specific plants, including peonies, daffodils, lilies, roses, gladiolus and azaleas. The authors are professional and amateur plant breeders of many fields, even including Henry A. Wallace's reminiscences on hybrid corn production.

Indeed the range of material covered is so large that often there is a superficial treatment of what needs more intensive explanation. This may be excused, however, since the handbook is designed to stimulate interest in plant breeding, and to start the novice into a fascinating new hobby. Once started he will find more specific knowledge available to him as he digs deeper and deeper into his subject.

J.A.W.

---

*Landscaping With Vines*, By Frances Howard; 230 pp., 28 plates; Macmillan, New York, 1959; price $6.50.

MISS HOWARD and the Macmillan publishing company have given us an excellent handbook on vines, complete with cultural information, climatic demands, a broad concept of garden usage, an interesting choice of material well illustrated with pen-and-ink drawings and photographs. It is practical in its arrangement, well indexed and includes a most helpful glossary.

Miss Howard advocates the use of vines as screens and cascades, for shade and quick effects, as groundcovers and houseplants, to give us tracery effects against walls and as specimen plants when we need strong accents or a focal point in our landscape design.

The one great disappointment in *Landscaping With Vines*, for your reviewer, is the large number of intriguing vines which would not accept our climatic conditions. Living in the San Francisco Bay area, Miss Howard whets our horticultural appetites with such tidbits as *Streptosolen Jamesonii*, with "small orange-red flowers blooming in large clusters against bright green, slightly ribbed leaves," *Pandorea pandorana*, the yellow-flowered "wonga-wonga vine" of Australia, and *Artabotrys uncinatus*, grown for its highly polished foliage, fragrant but inconspicuous greenish-white flowers, and fragrant, plum-like yellow fruit.

Miss Howard's concept of vines includes such upright shrubs as *Forsythia suspensa* and *Camellia Sasanqua*, since they take kindly to training or espaliering.

*Landscaping With Vines* has much to offer even the Northwest gardener and we may find ourselves growing some of the more tender vines in protected areas of our gardens.

PAT BALLARD

---

*The Garden Flowers of China*, by H. L. Li. The Ronald Press Co., N. Y. Price $6.50.

JOURNALS of various American arboretums vary from single sheet reports to the highly technical "Journal of the Arnold Arboretum." Perhaps the Journal that I most look forward to comes quarterly from the Morris Arboretum of the University of Pennsylvania, which contains scholarly but highly readable articles by Dr. Li, staff taxonomist of that fine Arboretum. His articles are essentially chronicles of a single tree species or groups of closely related species and deal with their history—natural and horticultural. He will discuss their occurrence in the wild, their differences and/or similarities, their history under cultivation and often where one may find unusually fine or old specimens. In all this makes very fascinating reading.

Dr. Li has utilized this same technique in *The Garden Flowers of China;* as a result the book is divided into twenty-five chapters, twenty-one of which deal with one flower or a group of related flowers that are part of Chinese garden history. Almost all of these flowers have found their way into western gardens and it is an interesting experience to read of the cultivation of the tree peony over a thousand years ago. A list of the chapter heads is a list of plants we grow and cherish, i.e., herbaceous peonies, chrysanthemums, flowering apricot and peach, camellias, crabapples, and so on. Each discussion is more or less complete in itself, and one need read only one chapter to find the history of one plant. Yet despite this compartmentalized style, there is no sense of disunity, any more than one feels disunity in a well planned garden of many different types of plants. Partly this is so because of the continual thread of Chinese history strung through the chapters, and partly because of Dr. Li's skill in putting the book together.

A word of warning however; many readers in the rhododendron-conscious Northwest will be disappointed, perhaps, in the selection of plants for this book, for despite the numbers of these shrubs native to China, only a few were cultivated by the Chinese gardeners and these all of the Azalea series. Magnolias are another genus that the Chinese gardener could have chosen from over a dozen lovely natives, yet commonly grew but two. Doubtless this was because most of these, both rhododendrons and

magnolias, grew in the less accessible parts of southwestern China, which has a much less severe climate than that of the northeastern areas.

The line figures used to illustrate the chapters are charming and accurate pictures of the plants discussed, chosen mostly from old Chinese herbals and horticultural works.

Anyone interested in horticultural history, Chinese history, or in a readable and informative book can do no better than invest in *The Garden Flowers of China.*

J. A. Witt

---

*Successful Gardening Without Digging,* by James Gunston (Stanley Paul & Co., London, 1960). Price 12 shillings & sixpence.

"NO DIGGING?" I have always contended that a little digging was a great pleasure . . . the pressure of one's foot on a short-handled spade and the lifting of a spadeful of mellow soil is a satisfaction comparable to any other pleasant garden duty.

Mr. James Gunston, in his little book *Successful Gardening Without Digging,* has an argument unanswerable to most gardeners. After 45 years of observation and work with garden soil, Mr. Gunston has proved to his own satisfaction that nature can do as complete or even a better job of cultivation than man can do by digging. He is of the opinion that digging adds nothing to the soil; in fact, he seems to consider it detrimental since it brings weed seeds to the surface to germinate and does not destroy perennial weeds but helps them to multiply.

He observed that every autumn the soil has a thick covering of leaves, dead grasses and weeds, but in the spring all this covering has virtually disappeared. Something must be burying this dead herbage. He found it to be a basic truth that the earthworms clear up the rubbish that we regard as a nuisance and that during the winter they convert it into a rich soil ingredient usually referred to as "humus." "Nature has cropped huge areas of the earth's surface for countless generations without the help of man." If soil is dug just before a period of wet weather, the digging destroys the channels made by the earthworms to carry water to the subsoil where it is stored to be used in dry times. Air follows the water and aerates the surrounding soil.

There is a chapter dealing mostly with worms and what they do if properly encouraged. He shows their great importance to the success of the "no-digging" system.

The book is written primarily for the help of those who grow vegetables, but it is valuable to any gardener interested in soil structure, in organic wastes, and to all gardeners who would be glad to lessen the manual labor involved with creating and rejuvenating the average garden.

G. D.

---

*The American Camellia Yearbook 1959.* Published by the American Camellia Society. Gainesville, Florida. Membership $6.00 a year.

IT'S a real accomplishment to produce a book year after year dedicated to the same group of plants. This the American Camellia Society have done with their annual Yearbook. The 1959 issue is an example of the sustained high standard of information and interest. There is stimulating reading for the most devoted camellia enthusiast, equally interesting articles for the casual reader.

Under the heading "Relatives, species and varieties" writers have delved into such subjects as: Chromosome Numbers; Possible Cause of False Camellia hybrids; *Yunnanea*—A New Genus of *Theaceae* from Yunnan, China.

Interesting coverage is given to Diseases and Insects and to General Culture. Of particular interest to the collector are lists describing the new varieties developed and developing in different parts of the camellia world.

The book is generously illustrated with both color and black and white plates. Some of the newer varieties of camellias are shown in color.

The yearbook is a bonus of membership in the American Camellia Society.

H. G. B.

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## Flowering Cherries

*(Continued from Page 26)*

grant semi-double pale pink cherry fairly well known around Seattle. "Fukurokuju' is very similar.

'Shirotae,' well-known as 'Mt. Fuji,' is a large-growing, flat-headed tree with semi-double white flowers, sometimes single in young trees.

'Ukon.' Mr. John Wister states that of the varieties with greenish-yellow flowers he would choose 'Ukon.' There is an excellent specimen across the road from the offices in the Arboretum; another by the entrance to the Museum of History and Industry (fig. 4).

'Ojochin.' Mr. Robert Hansen (Spring 1953) considered this an extremely beautiful cherry. The abundant large single light pink to white flowers have notched petals which give a crinkled appearance, simulating the effect of semi-double bloom.

*Prunus tomentosa* (Nanking Cherry). Mr. Harold T. Abbott recommended this for the Spokane area (Summer 1947), stating that in the spring, along with the forsythias, this popular and highly satisfactory small tree may be seen there in large plantings. He goes on to say that: "It is one of the hardiest of the Prunus family and comes into bloom just ahead of the showy species of cherries, crabs and the host of other spring flowering trees and shrubs. It is easily propagated from seeds or cuttings, but in spite of the ease of propagation, *Prunus tomentosa* is not a rank growing commoner in the shrub garden. Wherever it is used it is admired, whether it be in the season of its spring blooms in early April before the leaves, in the summer with its clean green foliage and brilliant red edible cherries, or in the winter when its neat branching structure can be seen." In the Spokane region it is free from all insects and diseases. It does well in ordinary soil conditions and adapts itself rapidly after transplanting.

The following books are available for reference in the Arboretum Library:

*Cherries of Japan.* Ernest Henry Wilson, Cambridge, Mass., 1916.

*Ornamental Flowering Cherries.* Paul Russell (USDA Circular 313), 1934.

*Ornamental Cherries.* Collingwood Ingram (Country Life Ltd., London), 1948.

*Japanische Bergkirschen.* M. Miyoshi ("Jour. Coll. Sci.," Tokyo), 1916.

---

*Tis sweet, in the green spring,*
*To gaze upon the wakening fields around,*
*Birds in the thicket sing,*
*Winds whisper, waters prattle from the ground,—*
*A thousand odors rise,*
*Breathed up from blossoms of a thousand dyes.*

—Bryant

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## Camellias

*(Continued from Page 19)*

The hybrid between *C. japonica* and *C. Sasanqua* is called *C. vernalis,* and is a good early flowering plant with well-formed, smallish, semi-double, white flowers. Seed of *C. reticulata* is producing large, single flowers of glowing colors, perfect shape, and remarkable substance and durability. The plant is a very vigorous upright bush, reaching 30 feet or more.

W. Arnold-Forster
(Winter 1948)

Distribution bears an important relation to the age or newness of any plant and this is particularly true with camellias which seem rather laggard in their dispersal. No two seedling camellias are alike and the increasing of plants is a slow process so that unless a variety is really put into mass production it might be "out" for several years before it would reach all parts of the camellia world.

Another retarding factor is that camellias do not perform consistently; a good variety in the Northwest might not be satisfactory in a drier, hotter section, and a fine performer in the south might lag or sulk with us.

The demand for "new" has been so great that most of the growers and many amateurs have felt compelled to put out new varieties. This has resulted in many being named and put on the market which have little or no merit. Not all new camellias are seedlings, some are sports of old varieties, others are old unnamed varieties which have been enjoyed by their owners but have not been discovered by a grower or fancier.

New camellias, their number is legion. Many fine old varieties will never be superseded but there is a definite improvement in many and there are those which are still in the unnamed state, to be released later, which have even more promise.

It is a fascinating endless chain, this "new" in camellias.

Helen Buzard
(Spring 1954)

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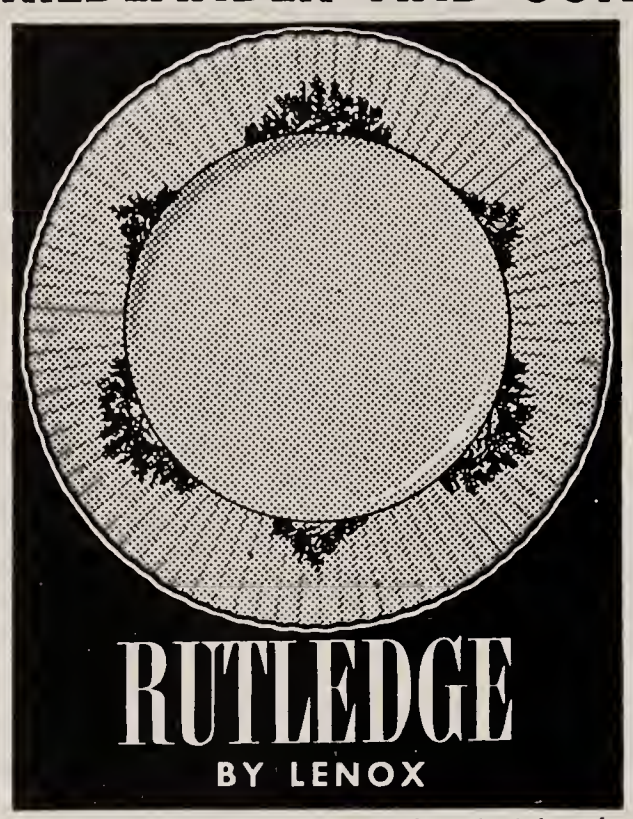

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## Rhododendrons

*(Continued from Page 6)*

'Britannia,' 'Pygmalion,' 'C. B. Van Nes,' 'Gill's Crimson,' 'J. G. Millais' and 'Mars.'

### Rose and Near Rose Flowers

This shade is usually listed with the pinks but one of the best is an old favorite, 'Cynthia.'

### Purples, Lavenders and Blues

These shades are disliked by many people and in rhododendrons the dislike is traceable to the "off color" or "dirty" shades often seen. There is one glorious exception, 'Purple Splendor.' It is a deep, rich shade and when planted in association with yellow is a sight not to be forgotten. In the typical broad-leaved varieties (lavender-flowered) 'Blue Peter' is sure to be satisfactory.

Even the best of the blues can be benefited by an early spring dressing of aluminum sulphate or powdered alum. The best are *R. Augustinii* and 'Blue Tit.'

### Tones of Yellow, Apricot and Orange

Yellow and apricot colors have been favorites in England for some time and they are not as widely known in the Northwest as they deserve to be. They range from lemon yellow to apricot and those most widely recommended are 'Butterfly,' 'Goldsworth Yellow,' 'Lady Primrose,' 'Mrs. W. C. Slocock,' 'Unique' and 'Elspeth.'

Orange is a rather new color in rhododendrons. Of the newer hybrids 'Fabia' is by far the best we have seen.

### Narrow-Leaved Rhododendrons

These forms are used primarily for naturalistic effects. *R. yunnanense* has pinkish

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white or orchid flowers with red dots. They literally smother the plant with their delicate, lacy beauty. I would class this among the ten best rhododendrons grown.

*R. Augustinii,* the finest of all the blues, varies in color from deep, clear blue to light lavender-blue. It is best selected when in blossom to avoid disappointment.

*R. cinnabarinum* is a most unusual plant with tubular flowers of bright cinnabar red. *R. oreotrephes* has mauve to mauve-pink flowers, small blue-green leaves and is lovely with yellow azaleas.

### Rock Garden Types

Here the chief difficulty in making recommendations lies in the fact that few people can agree on what really constitutes a rock garden type. A few well worth trying are *R. chryseum,* bright yellow; *R. impeditum,* mauve; *R. Keiskei,* lemon-yellow; *R. keleticum,* purplish-crimson; *R. ledoides,* white to rose; *R. myrtilloides,* plum; *R. pemakoense,* lavender; *R. tephropeplum,* rose to pink; *R.* Williamsianum, shell pink, and 'Blue Tit,' lavender-blue.

HERBERT G. IHRIG
(September 1942)

The clear, pink form of *Azalea nudiflora,* Pinxterbloom, is a fine garden shrub.

(Summer 1945)

The rhododendron was adopted as the official flower of the State of Washington in 1892 by a popular vote of the women of the state. The legislature subsequently ratified the ladies' choice.

G. B. RIGG
(September 1942)

Notebook of Winter 1946 has good Rhododendron Notes.


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## Flowering Crab Apples

*(Continued from Page 12)*

thickets and reaches a height of about 15 feet. The autumn foliage turns to yellow or dark purple.

*Malus angustifolia,* Southern Crab, from the southeastern United States. The flowers are the smallest of the native crab apples, scarcely an inch across, but are exceedingly fragrant.

*Malus ioensis,* Prairie Crab, is found in the midwest. Two double-flowered forms are noteworthy: 'Plena' or Bechtel's crab, and *fimbriata* or Fringe Petal Crab. This is reported to be more upright in growth than Bechtel's crab.

*Malus fusca,* Oregon Crab, found from northern California along the coast and islands to the Aleutians. White or rose-colored flowers appear in April or May and the small, oblong, yellow to reddish fruit ripens from August to November. The autumn foliage is often bright orange or scarlet.

Seeds collected in Oregon yielded a hybrid form at the Arnold Arboretum and was named *Malus Dawsoniana* in honor of Jackson Dawson who propagated it. The fruit is intermediate in size between the Oregon crab and a small apple, with the oblong character prevailing.

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In the Winter 1953 BULLETIN, our director, Mr. B. O. Mulligan, enumerated the crab apples planted up to that time. These are in the Winkenwerder Memorial Area and comprise twenty-two species, eleven varieties, thirty-eight hybrids. In addition there were twenty-eight other kinds still in the nursery for future use. Mr. Mulligan goes on to say: "Among these seventy different kinds there are some which will appeal in one or more ways to those interested in finding appropriate crab apple trees for their own garden, be it large or small. To these I would suggest that they visit the collection, both in spring—late April to early June—to see the flowers, and again during October for the fruiting season. One of the chief advantages of the crab apples over the Japanese cherries as ornamental trees is the fact that they have two seasons of beauty, while the fruits may also be valuable for preserving in some form for winter use, especially in colder regions."

Available for consultation in the Arboretum Library: *Crab Apples for America,* by Dr. Donald Wyman, published by American Association of Botanical Gardens and Arboretums, 1955. The same author's pam-

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phlet in *Arnoldia* Vol. X, No. 4, May 1950, for selected lists of kinds recommended for flowers, fruits, form or foliage.

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## Magnolias

*(Continued from Page 28)*

Next to rhododendrons, no group of exotic trees gives more distinction to a garden than a complete collection of magnolias. There is not one that is not worthy of cultivation.

All species love leaf-mold and peat, but the strong-growing sorts thrive in any well-drained rich soil. Naturally it is desirable to trench and enrich the soil suitably for such delightful trees and some extra care and labor at the outset will amply be repaid.

(NOTE: An excellent descriptive list follows this article).

RICHARD LAYRITZ
(Winter 1947)

NOTE: Articles dealing with magnolias in other parts of the country are contained in Winter 1947 issue (Vol. X, No. 4):
*Magnolias in English Gardens,* A. T. Johnson.
*Magnolias in Philadelphia,* Henry T. Skinner.
*Magnolias in the Parks of Rochester, N. Y.,* William Pitkin.
*Magnolias in New Brunswick, N. J.,* Dr. Charles H. Connors.
*Magnolias in St. Louis,* Dr. George T. Moore.
*Magnolias in Golden Gate Park,* Eric Walther.
and
*Magnolia St. Mary's* — A Dossier of Correspondence —-Spring 1948 (Vol. XI, No. 1).
*Temperate Zone Magnolias,* *Herbert G. Ihrig, Summer 1948 (Vol. XI, No. 2).

*A list of Magnolias.

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## Azaleas

*(Continued from Page 10)*

course, is one of the best. For a nice, rose-colored species with a delightful clove-like scent and ironclad hardiness the superior forms of *R. roseum* . . . closely related to the Pinxter, *R. nudiflorum*. But in its best forms of clear rose, fair-sized flowers and an incomparably spicy fragrance, *R. roseum* is vastly superior to *R. nudiflorum*.

The Flame Azalea, *Rhododendron calendulaceum,* is one of the best known of all deciduous azaleas. It is native to North Carolina and neighboring regions, but is entirely hardy in the north. Although typically orange, it may be found in colors ranging from pure light yellow and spectrum yellow to vermillion red, with all intermediates and many interesting patterns. The spherical or round truss, consisting of up to 30 flowers per head, is not an uncommon type of inflorescence in *R. calendulaceum*. It gives them a distinctly rhododendron-like look. When planted among evergreen rhododendrons, these azaleas harmonize perfectly. When a group of rhododendrons, such as the Catawbas, appear oppressively dull or somber because of the prevalence of a lilac or purplish tinge, a few yellow azaleas with round trusses, planted among them, will enliven the whole scene.

Probably *Rhododendron arborescens* ranks next in importance; it has a wonderful heliotrope-like scent. Another white-flowered species, *R. viscosum,* is the latest of all to bloom, coming in July. This, too, is very fragrant; its flowers are neither large nor numerous and are partly concealed by the foliage. Another very worthy white species is the white form of *R. atlanticum,* about 18 inches tall, early, rose-like scent.

The Chinese species, *R. molle,* has been mentioned as a parent of hybrids. This and its Japanese counterpart, *R. japonicum,* are so nearly alike as to be the same for most practical purposes. Their difference is based upon leaf character and a supposed greater hardiness of *R. japonica*. The flowers are twice as large as those of the American species, but not borne in such definite trusses. They require copious moisture in summer.

Surveying deciduous azaleas other than those in the five-stamen group, we come first to the Royal Azalea of Korea, *Rhododendron Schlippenbachii*. This has large, light pink flowers, very distinctive leaves and will grow to a height of ten feet. It withstands sub-zero temperatures successfully. *Rhododendron Vaseyi* is one of the very finest of deciduous azaleas in point of usefulness. Although native of North Carolina mountains, it withstands sub-zero temperatures. *Rhododendron pentaphyllum* is an interesting species from Japan but is rare in this country. The Rhodora, *Rhododendron canadense,* is a small American species from the north with thin lilac-colored flowers. It should be grown where it will not bloom alongside other flowers of more brilliant hue.

Grown in deep shade, deciduous azaleas frequently look straggly and lack flowers. On the other hand, they despise hot sunlight if it means dryness. Given a moist, peaty situation but never a water-logged soil, a leafy mulch to help maintain a uniform moisture condition all summer, plus plenty of light, they will bloom very freely. Naturally, for best effects, a grovelike background is the setting par excellence for an azalea garden. Deciduous azaleas are feasible, however, in the formal garden and in full exposure if proper care is paid to soil moisture. Once established, they are easy to maintain.

CLEMENT G. BOWERS
(December 1944)

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